

DAWOD (T.H.O.M.)

ph.D.

1952.

(Aden Dialect of Arabic.)

Reference copy



ProQuest Number: 10731424

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10731424

Published by ProQuest LLC (2017). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

Copy 1

THE PHONETICS AND PHONOLOGY OF
AN ADEN DIALECT
OF ARABIC.

--- --- --- ---

Acknowledgement .

The writer of this thesis wishes to express his boundless thanks and gratitude to Professor J.R.Firth O.B.E.,M.A., for his keen supervision and ceaseless constructive criticism of the work, together with the fatherly attitude he has always shown, making the writer feel at home all through his long association with the Linguistic and Phonetic Department of the S.O.A.S.

Thanks are also due to Mr.J.Carnochan B.A. for his criticism of the technical terminology of this work, Mr. T.F.Mitchell B.A. for his criticism of the scheme and order of the various parts of this thesis, and Mr.H.J.F.Adam for his tremendous technical help in preparing the illustrations of the thesis.

Any shortcomings that might be found in the work are due solely to the writer, and whatever part of the work is to be found satisfactory, it is only because of their help.

--- --

<u>CHAPTER.</u>	<u>C O N T E N T S .</u>	<u>P A G E</u>
	Acknowledgement.	
	Table of Contents.	
	Abbreviations.	
	Preface.	1
	<u>GENERAL SECTION .</u>	
Ch. I.	Introduction.	11
Ch. II.	The Techniques Employed.	13
	1 - Perception	13
	2 - Recording	22
	3 - Palatography	25
	4 - Kymography	30
	5 - Radiography	33
Ch. III.	List & Definition of Symbols.	34.
Ch. IV.	The Polysystemic Character of Language.	42.
Ch. V.	Notes on Grammar.	
	1 - Word	44
	2 - Morphological Types	50
	3 - Affixation	58.
	4 - Remarks on Syntax.	69

<u>CHAPTER.</u>	<u>C O N T E N T S .</u>	<u>P A G E</u>
	<u>PHONOLOGICAL SECTION .</u>	
Ch. VI.	Consonants and Vowels.	79
	1 - Definitions.	79
	2 - The A.D. Consonantal Units defined.	90
	3 - Classification of Consonants.	111
	4 - Distribution of Compatible Units.	117
	5 - Vowel Units defined.	118
	6 - Vowel Sequences.	125
Ch. VII	The Syllables.	
	1 - The Syllable in A.D.	130
	2 - Words and Syllables.	136
	3 - Syllabic Structure & Distribution.	141
Ch. VIII	Prosodies.	
	a) Prosodies of Medial Position.	
	1 - Function	158
	2 - Zero plosion	166
	3 - Anaptyxis.	170
	b) Prosodies of final position	
	4 - Diphthongization	172
	5 - Opener Vowel quality	172

<u>CHAPTER.</u>	<u>C O N T E N T S .</u>	<u>P A G E</u>
	c) Prosodies of Various Positions	
	6 - Voicing and Unvoicing	175
	7 - Tensity and Laxity	183
	8 - Glottalization	189
	9 - Aspiration	194
	10 - W.N.Y. Prosody	198
	11 - Quantity	204
	12 - Prominence	209
	13 - Intonation	218.
	<u>PHONETIC SECTION.</u>	

Ch. IX	Definitions of terms used.	245
	The Consonants.	
	1 - Classification	251
	2 - The Consonants in Detail	
	A - The Plosives.	258
	B - The Fricatives	296
	C - The Liquids.	327.
Ch. XI	The Vowels.	
	1 - The Classification of Vowels.	364
	2 - The front close vowels.	375
	3 - The front half-close vowels.	379
	4 - The open vowels.	382
	5 - The back half-close vowels	387

<u>Chapter.</u>	<u>C O N T E N T S .</u>	<u>P A G E</u>
6 -	The back close vowels	391
7 -	The central vowels.	395.

APPENDICES.

NOTES ON PALATOGRAPHY.

'' '' KYMOGRAPHY.

'' '' RADIOGRAPHY.

ILLUSTRATIONS.

ABBREVIATIONS.

A. D.	ADEN DIALECT.
C. A.	...	...	...	...	...	CLASSICAL ARABIC.
J.	...	...	...	...	...	JUNCTION.
P. I.	...	...	...	...	...	PHONETIC
						IMPLICATION.
S. G.	...	...	...	...	...	SPOKEN GROUP.

--- --- ---

N O T E .

When reference is made to palatograms in studying the phonetic consonants, as well as in some parts of the phonological section, the page referred to is in the appendix of illustrations.

--- --- ---

GENERAL SECTION.

P R E F A C E

The title of this thesis is "The phonetics and phonology of an Aden dialect of Arabic." Three terms are necessary to be clarified here; these are Aden, dialect and Arabic.

1. ''Aden colony and protectorates cover some 112000 square miles and stretch along the southern coast of Arabia from the Shaikh Said peninsula opposite Perim Island eastwards for some 700 miles to the frontier of Oman. On the north west they are bounded by Yemen. Further to the east the frontier merges with the desert. Its depth from Hadramaut, or southern coast, varies from 50 miles in the west to 200 miles in the east.''
2. ''The Port of Aden is formed by two volcanic peninsulas - Aden (Jabal Shamsan) and Little Aden (Jabal Imsan) - which are connected with the mainland to the north by short necks of sand. The area of the Crown Colony is small, only 75 square miles, exclusive of its two dependencies - Perim Island (5 square miles), and Kuria Muria Islands (30 square miles). The population of the colony at the census in 1946 was 80,516 of whom 51000 were males. It includes Arabs

(58,500), Somalis, Indians and Jews.''¹

The dialect studied here is of the 'Port of Aden' or more accurately of the part of this port known as 'The Crater'.

'The term 'dialect' has a connotation in technical linguistic usage which is somewhat different from its ordinary meaning. To the linguist there is no real difference between a 'dialect' and a 'language' which can be shown to be related, however, remotely, to another language. By reference the term is restricted to a form of speech to be unintelligible to the speakers of the latter.''²

The term 'Arabic' in the title includes a number of contemporary spoken dialects in the region between the Atlantic Coast of North Africa and the Western Perian⁵ frontier and from Syria to the Southern Sudan. Such term does not exclude Classical Arabic, which varies in pronunciation from one country in the region to the other, as the term 'Modern Arabic' would. This latter term covers the spoken unwritten dialects of the Arabs of today.

1. The Middle East. A Political and Economic Survey. RIIA. 1950 - p. 104.

2. Sapir, Selected Writings of Edward Sapir, p. 83.

The polycommunal character of the Aden population will, later, be related to the dialect studied as far as the vocabulary is concerned. The Arabs, as can be seen from the above quotations, are the largest single community, but they are not all 'Aden born'. The term 'Aden born' has, in the administrative context, a special implication as opposed to newcomers among the population. Those newcomers are chiefly from the neighbouring districts of the South such as the Protectorates and Yemen. As the town started in its history as a fishing village, the fishermen of the town claim to be the oldest group in settlement. This claim seems to win acceptance by all others. The fishermen are few in numbers. Second to these in antiquity of residence are some old families who planted themselves in the port long before the colonization of South Arabia and who are influential within the Aden town. The family of my informant is one of these; therefore, not only he, but also his father at least are 'Aden born'. These families, beside the fishermen, are the speakers of the Aden dialect. An educated member of an Aden family, such as my informant is, can be described as 'bidialectal' in different social settings. Within the circle of the family, as well as when talking to any fellow Adenese, he speaks Aden Dialect

but when talking to an educated Arab from outside the town, he speaks a modified 'Aden Dialect': a mixture of C.A. and A.D. words phonologically conforming to the characteristics of Aden Dialect. The contrast has then to be made between Aden Dialect and 'Aden Dialect', as this has to be made for every dialect of Modern Arabic as far as educated speakers are concerned. Care, however, has had to be taken to separate these two and to exclude 'Aden Dialect' of the educated speakers as far as possible from the data of this work, and to study an Aden dialect spoken by my informant as in his family circle.

The Indians of Aden are two types - Gujarati speakers, locally known as Banian, and Muslims, known as Buhra. Both sections are very successful traders, and together they form a community second only to the Arabs in size. But they have their sectarian differences. The Somalis are mainly from British Somaliland, and in numbers they come after the combined Indian community. The Jews are the least in number.

The Indian origin of the family of my informant has long been forgotten. Members of the Luqman family pride themselves on being Arabs, and when the question of their origin is brought up, they can be angry indeed. The eldest member of the family, a lawyer, owns and

manages a weekly 'Fataatul Jaziira' which is opposed by another weekly 'Annahda' on the question of the future of Aden town in relation to a 'South Arabian Union'. When the latter weekly used the name 'Buhra' in reference to Mr. Lugman, this provoked the most unfavourable reaction in the former newspaper. Many generations of the family have been born in Aden and intermarrying with the Arabs, and the Indian origin of the family is only something of the past. My informant was born, bred and educated in Aden. He has visited India and some districts in South Arabia and is now reading for the Bar in Lincoln's Inn. During my field work in Aden, Mr. M. A. Lugman arrived from London and I met him there as I did many of his family.

It has been stated that Aden is a British Crown Colony and is polycommunal in character. It is also a principal junction for transit trade between South Asia and East Africa and an important station for the British Navy. The various races resident in Aden are necessarily in active intercourse and belong to some of the dynamic nations of the world. There are, therefore, numerous loan-words in Aden Dialect from the languages spoken in Aden. The A.D. borrows from C.A. or more correctly Neo-classical Arabic of the radio and

the press (with special stress on the Egyptian radio and press and films) as far as political jargon and terms are concerned. Even the Aden newspapers are to a large extent dependent in both vocabulary and stylistic character on the Egyptian press. Since Aden has^{had} Indian administration, apart from the fact of having Indian residents, it is understandable that some Indian words have found their way into the Aden Dialect. Indian films are shown in Aden and at least one cinema shows nothing else there. English, the present official language of Aden, has quite a large number of words in the dialect, and these words are either found as they are or, if contrary to the systematic patterning of the dialect, are brought in line with this patterning, as can be seen in the following examples of borrowed words and their meanings.

WORD.	MEANING.	WORD.	MEANING.
hinʃ	inch	sooʃarii	soldier
daʃʃar	to dis-charge.	faraŋʃii	European (French).
ədreewar	driver	ʃaab	modern shop
winʃ	winch	daxtar	doctor
roofal	loafer	nars	nurse
cabat	cupboard	esbitaal	hospital
buuc	book	baŋʃala	bungalow
reel	train	roolii	bus
mootar	motor	faaʃan	fashion
baabuur	vapour	mooda	mode
tiric	electric	bajʃaf	to pay off
ʃulub	bulb (globe)	cansal	to cancel
waajir	wire	damfal	to say 'damn fool in swearin
coot	coat	bacsan	to box
ʃamiiz	shirt	neebii	navy
esbiringʃ	spring	el ʒaamii	the army
baadrui	pressed	manwar	man o' war
miiz	table	beelat	pilot
carar	collar	warʃa	workshop
hafiis	office	wiic	week

WORD.	MEANING.	WORD.	MEANING.
culoonjaa	colony	quscuul	school
mootarsiicil	motorcycle	ʃannaʃ	to change
biiscil	bicycle	hafteem	half - time
esbictar	inspector	tireeram	throw - arm
camʃaneer	commissioner	balanticit	penalty
sicitrii	secretary	ʃawwal	to score a goal.
ʃoolii	goal keeper	dismis	screw driver
balʃan	pension	bacla	buckle
		noot	note
niimicharaam	ungrateful	ʃamʒdaar	sub-inspector
ranʃala	lame	xabardaar	caution
bundeera	flag	baʃʃawaala	messenger
raʃda	road	beesa	pice (Indian coin).
sarcaal	chief	ʒaana	anna (Indian coin)
ʃuucii	police station	ʃoolwaala	goal keeper
hawardaar	chief constable	ʃeelaan	gaoler

W O R D	M E A N I N G
ceec baac	back (football).
santar	centre
leenmeen	linesman
rifrii	referee
baasinj	passing
esbeet	speed
esteerinj	staring
biric	brake
hoob	stop
nambar	number
birmiit	permit
bootriis	port - trust
coobif	cabbage
beetarii	torch - light or battery.
baraf	to use a brush
buruf	a brush
burufaat	brushes

W O R D.	M E A N I N G .
bunf	point
huuc	hook
ḡahwaac	hooks
bart	part
baasnoot	pass note
sastara	sister (medical)
cinin	clinic
banfar	puncher
habatiim	overtime
diissmiss	to dismiss
baclaat	buckles
banca	electric fan
baḡiifa	small garden
balfan	Indian soldier (platoon)
ḡuffaar	pickles
baaniiḡajs	icy water.

Some of these words, as can be seen on the preceding pages, have been submitted to the phonological system of the dialect during the process of borrowing. The main process is to modify the following :

- 1 - impossible pattern to be possible,
eg. cf.

driver - edreewar

- 2 - foreign sounds to A.D. sounds as in the
above comparison.

C H A P T E R I

INTRODUCTION.

-- -- --

I N T R O D U C T I O N

Linguistics as an Autonomous discipline.

'Those who are engaged in the investigation of languages have but recently begun to claim for their study the rank and title of a science. Its development as such has been wholly the work of the present century, although germs go back to a much more ancient date. It has had a history, in fact, not unlike that of other sciences of observation and induction - for example, geology, chemistry, astronomy, physics - which the intellectual activity of modern time has built up upon the scanty observations and crude indications of other days.'¹ Linguistics had been an integral part of ancient philosophical thinking. When, in later times, it came to be recognized as a separate branch of study, linguistics could not do without the help of other scientific and philosophic subjects. Therefore, linguistic thoughts were contaminated and confused with philosophical, psychological, logical, theological and even mythological thinking and some terms and expressions of these subjects were imported

1. W.D. Whitney, Language and the Study of Language, London. 1880, p.1.

into linguistics. Such contamination and confusion led, as it did, to types of approach to linguistic problems that could hardly be described as linguistic. But with the broadening of interest in the study of language, such state of affairs was destined to come to an end. 'For historical reasons which are readily understandable, the scientific study of language was defining its territory and methods, and v^medicating its position as a separate discipline, with the post - Napoleonic period in Western Europe. Its first efforts were affected by the intellectual climate then prevalent.'²

Modern Linguistics, then, is the outcome of the eighteenth, nineteenth and twentieth centuries. In each of these centuries, linguistic activities have been taking a definite and distinct character from that of the other two centuries. The eighteenth century was one of classical philology with broadening of the outlook and the indulgence in speculations on the origin of language and comparing the relative value of languages. Such speculations and comparisons are not

2. Margaret Schlauch, Early Behaviourist Psychology and Contemporary Linguistics. Word. Vol.2. 1946. pp.25 - 36.

within the range of modern linguistic studies of today. The paramount event at the end of that century was the discovery of Sanskrit by Sir William Jones in the year 1786 which marked the beginning of modern linguistics and its new approaches. 'Within a few years of Jones' declaration the new 'science of language' had begun its course as a specific field of study, independent of the study of literature. In the course of the following century its students had to work out for themselves both the forms of its discipline and the technique of its methods.'¹

In the nineteenth century these 'forms of discipline' and that 'technique of methods' were chiefly concerned with the historical aspect of language.' Those who know the popular works of Otto Jespersen will remember how firmly he declares that linguistic science is historical. And those who have noticed the fly-leaves of the volumes of the New English Dictionary - generally referred to as the Oxford Dictionary - will remember the guarantee, 'on historical principles', which explains the N. in N.E.D.² This historical aspect and the

-
1. M.M.Lewis. Language in Society, p.232.
 2. Firth, Personality and Language in Society, Sociological Review, Vol.XLII. Sect. two. 1950. p.37.

associate idea of evolution coupled with a widespread tendency towards mechanism brought linguistics not only in harmony with but also under the patronage of the natural sciences especially biology. This was not only reflected in the classification of languages, and the introduction of the terms 'family', 'parent language', 'sister language', but also in the treatment of a given language as a growing or decaying organic being as can be found in the works of Max Muller, for example, and in the following typical quotation

' S'il est vérité banale aujourd'hui, c'est que les langues sont des organismes vivants dont la vie, pour être d'ordre purement intellectuel, n'en est pas moins réelle et peut se comparer à celle des organismes du règne végétal ou du règne animal.'¹

Not only did the natural sciences patronize linguistic studies, but also the social sciences did, such as psychology and sociology. Students of ~~the~~ language in the nineteenth century were carried along with the general intellectual current which was at its full energy, and sought guidance, in dealing with linguistics, from the uncoordinated techniques of the various branches of science. 'There were those who

1. A. Darmenstater, La Vie des Mots, p.3.

believed that the chief clue to the understanding of the nature of language was psychology - to understand how language works we must study the mental processes of its speakers. And those who held that the study of language must be sociological, that language is a form of behaviour developed in the course of man's efforts to satisfy his needs in society.'¹ Such an attitude of linguists could not possibly produce autonomous linguistic study prompted solely by linguistic requirements. Nevertheless, that century is responsible for the advancement of this science to great lengths. It has witnessed a great deal of creative efforts which resulted in general statements we now consider as axiomatic: the grouping of languages, sound laws, analogical creation and other equally vital concepts. Induction replaced deduction in handling linguistic data and some whimsicalities of the past were exposed and discarded. 'In the course of their detailed researches Indo-European linguists have gradually developed a technique which is probably more nearly perfect than that of any other science dealing with man's ^sint^tutions.'²

-
1. M.M.Lewis, Lang. in Soc. - p.232.
 2. Sapir, Selected Writings - p.160.

If the character of the nineteenth century linguistics was historical, that of the twentieth is descriptive. 'Descriptive linguistics is deserving its place more and more as an autonomous group of related disciplines - such as phonetics, phonology, grammar, lexicography, semantics and what may be called the sociology of language.'¹ At the beginning of this century, the influence of mechanism was still felt in linguistic study, and an American version of this doctrine has been introduced as psychological behaviourism which coloured American linguistics as can be seen in Bloomfield's Language. At the same time, attempts were made to disentangle linguistic techniques from outside influences; the most successful of these has been the Saussurean formal approach labelled by communist linguists 'static mechanical structuralism'².

Just as Bloomfield was a follower of Weiss's psychological behaviourism, de Saussure was an adherent of Durkheim's sociological structuralism, and in both cases linguistics is deriving its technique from an alien source to the sacrifice of linguistic autonomy at the basis. One sees language as an ensemble of

-
1. Firth, *ibid.*
 2. Firth, *ibid.*
 3. Firth, *ibid.*

'conditioned reflexes' and the other views it as a structure that can even be described with such dimensions as horizontal and vertical in the explanation of his two terms 'synchronique' and 'diachronique'.

Looking at language as a social conventional institution composed of systems and categories of signs makes an autonomous linguistic science a possible achievement. In fact, the allied techniques of the various branches of descriptive linguistics used in the 'Linguistic and Phonetic Department' of the S.O.A.S., built on the functional point of view and keeping the social factor in sight, are autonomous in character. 'The functional point of view has not been chosen at random. It is derived from the conception of language as a means of intercourse, as a tool of definite use'.¹

Built on the two concepts of 'form' and 'function' the descriptive linguistic techniques render natural and social sciences ancillary instead of patronizing and rid themselves of alien concepts and terminology. The teachings of Prof. Firth are aimed in that direction.

'For my own part and for a number of my colleagues, I venture to think linguistics is a group of related techniques for the handling of language events. We regard our group of disciplines as designed for systematic

1. A. Martinet, Phonology as Functional Phonetics, Publications of the Philological Society XV, 1946, p. 5.

empirical analysis and as autonomous in the sense that they do not necessarily have a point of departure in another science or discipline such as psychology, sociology, or in a school of metaphysics.'¹

This is also the line taken for this work, and it will be noticed that 'form' and 'function' are kept in mind in dealing with every aspect of the dialect studied in this work. I feel inclined to describe this type of approach as 'functional formalism'.

1. Firth, *ibid.*

C H A P T E R I I .

The Techniques Employed .

-- -- --

THE TECHNIQUES EMPLOYED.

1 - PERCEPTION.

I have had Mr. Lugman as my chief informant, an account of whom has already been given. The first task was to get some passages or stories recorded, and write these in a phonetic transcription in the presence of the informant, for though the A.D. and my own dialect can be described as mutually intelligible, it was not at all easy to establish a word division in a number of cases. Words which have been obscure on the records were, at my request, repeated by the informant and tried again on the record until they are recognised by perception. My informant has also had ~~had~~ the task of preparing list of words and sentences defined for him, eg. I told him to prepare, in alphabetical order, all the word in the dialect of the 'faɫl' structure after providing him with an example, i.e. a word of cvcc form.

No perceptive technique is satisfactory without introspection on the part of the student and repeating the utterances to the informant until he is satisfied with the pronunciation. Some tricks have also to be played on the informant to examine his integrity. Sometimes he passes a bad or faulty pronunciation as correct,

either because he is being courteous, or tired or unattentive. When his attention is drawn to the trick, he is apt, in the future, to be more careful with his approval of the student's pronunciation. It is important to develop a technique of putting questions to the informant. A badly chosen or unwisely put question might either result in a misleading answer or prove puzzling to the informant. For example, it would not do at all to allow any specialized technical term to figure in the question; because as far as the informant is concerned, such technical term is nonsensical. No student would, for example, ask his informant, untrained as he is, to give him an utterance with a tune two intonation. Neither does a student ask to be given a list of words with, for example, vc as initial. 'Tune two' and 'vc' are quite out of place in such contexts.

It is equally important to avoid getting the informant aware of the issue involved, i.e. the aim sought in the pronunciation, if through long association with the work he came to appreciate such issues. For example, it would be wrong to tell him 'I want to see if the case is this or that', because this will make him conscious of his pronunciation and perhaps inclined himself to choose a pronunciation which is often wrong. It would not do either to face him with an optional

question such as 'Is this word pronounced "عاقل" or "عاقلي"?'
If it is possible, write it in the local script and ask him
to read; or if he is illiterate or the dialect is not
written, ask him 'what do you call so and so ?' and his
answer will involve the pronunciation required, which,
on request, can be repeated as many times as necessary.

The advantage of perception over instrumental
techniques lies in the fact that the human ear is the
most perfect instrument for linguistic purposes, and that
the material to be studied by perception is the living
language itself in contrast to wipe-offs in palatography,
modulations in kymography and the pictures of X-Rays
which are not language. Abstractions from perception are
direct but those from instrumental techniques are
indirect. One instrumental technique, at least, is
adopted to extend the area of perception with the
introduction of a potential permanence to the utterance.
This technique is recording, next to be discussed.

2 - RECORDING.

Recording, as has already been said, is adopted as an extension of perception with the introduction of a potential permanence of the utterance, through the permanence of the disc, or any other record such as tape or wire. An unlimited repetition of a recorded utterance can be attained through the lifting and placing the needle at a certain place on the disc where this utterance begins. Discs are reckoned, among other means of recording, as the best capable of giving as much features of the sound as possible, but recording in general falls far behind the living voice of the informant in this connection for two reasons : first, the living voice is much clearer in quality and the record is only a second rate production of it, and second, because recording is only an oral sensation while the living voice can be coupled with a visual observation of the organs of speech. 'What we call the vocal organs or the organs of speech are of course not primarily and not solely concerned with the production of sound. The lips, the teeth and the tongue might be called organs of eating, the larynx and the lungs organs of breathing.'¹ The absence of observation of these organs makes the perception of a recorded

1. Bloch & Trager, Outline of Linguistic Analysis, p.13.

utterance far inferior to perceiving the living voice.

Another drawback of recording as compared to living voices is that if you have a blurred utterance on the record you cannot hope for a clearer one through repetition as you do when the informant pronounces the examples.

Records are about the only documents to be consulted when checking up observations on so many aspects of the work such as vowel qualities, intonation, stress and so on. Such linguistic features are not to be checked upon, in the absence of the informant, in any instrumental technique except records. This gives recording among instrumental techniques a value equalled by no other.

It is important to be careful in choosing the material to be recorded. For this material is supposed to serve a definite purpose in the work. Moreover, the specific subject to be studied may require a different material from that of some other subject. A student of anthropology may interest himself in the same recording material as does a phonetician, but this is not necessarily so, for an anthropologist can hardly be interested in sets of words or in paradigms.

The recording material for a student of phonetics includes :

- 1 - Prepared list of words.
- 2 - ' ' narratives.
- 3 - Extemporaneous narratives.
- 4 - Dialogues and conversations and similar functions.

The part to be prepared requires the skill of the student and a keen sense of choice with an insight in the work and the future examples to be chosen.

3 - PALATOGRAPHY.

'Palatography has been used since the pioneer work of Rousselot.'¹ Though this technique started with the use of palatograms of isolated sounds, these palatograms are now ^{not} treated as reliable, since language is made of complete utterances and not of isolated sounds.

Word-palatograms, and even sentence-palatograms, are now the outcome of this technique. Such palatograms are of two types :

1 - Examples chosen with only one sound

articulation capable of giving a wipe-off on the artificial palate (or uni-contact palatograms).

2 - Examples with more than one sound articulation of such capability, but none of the articulations in the utterance is interfering with the wipe-off of any other. Up to three sound articulations can be found in an example, e.g. 'daxrui:c' (this is called a multi-contact palatogram).

In this latter type, the choice of articulations must be careful. The above example, 'daxrui:c', contains dental, post-alveolar and post-palatal wipe-offs, none

1. Firth, Word-Palatograms And Articulation, Bulletin of the S.O. & A.S. - Vol. XII, Parts 3 & 4. 1948. pp. 857-64

of which is superimposed on the other. Uni-contact palatographic examples are much easier to choose, and in A.D., as in all Modern Arabic Dialects, there is an abundance of such examples. After collecting the examples for palatography, with a view, of course, to what questions such technique can answer, every example is pronounced only once with the artificial palate in its place in the mouth. This artificial palate is then taken and projected on semi-transparent paper and the image of the palatogram is traced on the same paper. This palatogram is kept until on a future date another of the same example is traced beside it on the same paper, tracing the same example on the same paper on different dates will provide an ample picture of the typical palatogram of this example. I say typical because no two palatograms of the same utterance are identical in every detail; they may be approximately similar and can be put under a typological category. With different examples and different position the two palatograms representing a so-called same sound may be even typologically different, because of the play of prosodic features in articulations of different sequences.

The projector employed in my work has been invented in the Department of Linguistics and Phonetics where I worked.¹ These palatograms are mainly used in

1. An account of this is found in the publication By Firth & Adam 'Improved Techniques of Palatography and Kymography.' Bulletin of S.O. & A.S. Vol. XIII. Part 3, 1950

articulatory comparisons and illustrating that venturing an organic description, and claiming this to be uniform in all cases of any sound is an arbitrary generalization not worthy of careful phonetic research. For as there is prosodic difference in the articulation of the same sound in different contexts, such difference is correspondingly matched in the shape and the size of the wipe-off. For such purpose, the examples chosen must be comparable, i.e. with great similarity and little difference in their description. For comparing the sound in different positions, eg. initial v. medial, the best is to compare examples taken at the same date. For example, initial 't' in 'tæ:b' with it in 'tʷ:b' and with final 't' in 'bæ:t' can be compared when the examples are pronounced on the same date. But palatograms of 'tæ:b' to be compared, must be taken on different dates. Difference of verbal context calls for unity in physical and psychological conditions ascertainable only in unity of time; but when the verbal context is one, difference of time is required to show the dissimilarity of wipe-off.

The ideal examples to be chosen for this technique, I think, are those with open vowels, because the amount of lateral contact with these vowels is less than with

the closer ones, and if excessive lateral wipe-off is interference, the front close vowels can easily be labelled interfering.

Another feature that can be studied in palatography is tensity and laxity of articulation. Tensity and laxity are best understood in the context of organic movement, i.e. articulation. Tensity of the tongue in articulating any sound on the artificial palate will naturally result in a wider wipe-off. In fact the difference of tensity is correspondingly matched in the lateral wipe-off as in the wipe-off of the place of articulation. This difference in the lateral wipe-off is the reason for the inclination above to describe the front close vowels as interfering, since a lateral wipe-off of a front close vowel will be expected, even in lax articulation, to be wide.

In A.D., the difference of closeness in the vowels of the same unit has been tried in palatography. The choice of examples centred on the long vowel of the CVVC syllable with identity in all the examples of the initial or the final consonant and the change of the other from one to the other of the seven groups, e.g.

ʃa:b - xa:b - ba:b - ɟa:b - na:b -
dæ:b - ʃɛ:b

to see if there is corresponding difference on the

palatogram. The second, third and fourth examples gave, as was expected, no wipe-off at all. But with the rest of the examples, this correspondence has been found. This, of course, is no attempt to establish correspondence between the wipe-off and the acoustic quality of the vowel; such^{an} attempt is certainly far fetched. But one might venture to attempt tying this difference in the palatogram with that of the tongue position due to the structure of the syllable, of which the vowel is an integral part, as opposed to other comparable syllables in the list.

Palatograms are not utterances but are correspondences to them at an instrumental level.

'Similarly, each instrumental technique used in investigations of repeated utterances is an extension of bodily equipment, an additional sense, so to speak, able only to make its own specialized 'abstraction' from the utterance, always within the limitation of the instrument.'¹ One of the limitations of the palatographic technique is that not every consonant can be handled through it; in fact, only consonants articulated with the front of the tongue are capable of giving palatograms. Another one is that not every succession of consonants can be chosen as an example, because of the interference of one articulation with the wipe-off of the other.

1. Firth, Word-Palatograms & Articulations, Bulletin. *ibid.*

4. KYMOGRAPHY.

Kymography has its own course of development and improvements of both its instruments and techniques.

'The kymographic technique now employed produces a ''black-on-white'' wave-form, having the effect of giving a clearer and more striking picture than was previously the case. The practice of varnishing the smoked paper has become unnecessary, thus eliminating one of the more undesirable aspects of kymography by the usual method.' ¹

In a mouth kymogram, there are :

- 1 - An imaginary line at rest which the style would draw on the revolving surface in the absence of agitation. The excursion of the style during an utterance is measured in relation to this line.
- 2 - An excursion of the style above or below the line at rest in relation to the air pressure.
- 3 - Modulation or wave-form during an excursion of the style. This is in relation to the presence of voice; an absence of voice results in the absence of modulation (but not necessarily of excursion).

1. Firth & Adam, Improved Techniques in Palatography and Kymography - Bulletin of S.O. & A.S. Vol.XIII, Part 3, 1950.

Related to the line at rest, this excursion is more vertical on this line with plosion than with any other manner of articulation. The sudden release of air in plosion causes the style to make an excursion sometimes almost at a right angle with the line at rest. When measured from this line, the distance between the line of tracings and the line at rest can be related to the air pressure regardless of the manner of articulation. A gradually ascending line of tracing correlated to a fricative can travel as far from the line at rest as that correlated to a plosive. The air pressure responsible for the distance of excursion can be related to tensity and laxity of articulation. Tensity and laxity then can, to a certain extent, be deduced from a kymograph tracing, as can be seen in comparing a kymograph tracing corresponding to an intervocalic articulation of a consonant with that corresponding to the articulation of the same consonant in double medial position or in final position. Voicing and unvoicing are other features which can be deduced from kymograph tracings both of mouth and larynx. As has already been said, modulation in the line of tracings is an indication of the presence of voice; the absence of this modulation may be equally indicative of the absence of voice. Also

complete and incomplete plosions are to be studied through kymography, by observing the type of excursions and whether there are excursions or not.

Here it should be emphasised that 'a kymograph tracing is not an utterance any more than is a word or a sentence in an ortography^h, or in a transcription, no matter how broad or narrow. It is only an abstraction of the particular kind which the machine with all its limitations is able to take from disturbances of the air caused by the speaker.'¹

1. J.Carnochan, A Study in the Phonology of an Igbo Speaker. Bulletin of S.O. & A.S. Vol.XII.Part 2.

5. RADIOGRAPHY.

A static X-Ray picture is not a technique closely in line with linguistic research, because when this technique is employed for linguistic purposes, it cannot handle a dynamic continuum of utterance. It is only capable of handling postures which are not linguistic. It is not a task of this work to predict the use of cine-radiography for linguistic purposes, though this may be the general practice in future. The X-Rays technique adopted for my purpose involved the informant sitting sideways to the camera. This position was adopted to prevent superimposition, at any point, or one part on the other, except the inevitable superimpositions of the teeth on the tongue. This position is usually obtained by screening the informant and modifying his pose until it is thought ideal. Photographs taken with the head slightly turning left or right show respectively a narrower and wider pharyngeal cavity than the picture of the ideal position photographed at rest.¹

Postures, however, are non-linguistic light cast on linguistic articulations when the results obtained from these pictures are found to conform with those from other techniques, such as perception and palatography.

1. Compare the photographs: rest, rotation left, rotation right.

CHAPTER III.

List And Definition of Symbols .

-- -- --

List and definition of symbols

There are symbols used in phonetic transcription for this work and others used for phonological transcription, which may be illustrated as follows:

1. Phonetic Symbols:

a) Consonants:

b	For a voiced bilabial plosive, e.g. balɒd.
m	" " " " nasal, e.g. ma:t
w	" " " " semi-vowel, e.g. walɒd
ɸ	" " voiceless bilabial fricative, e.g. ʒa:bɸi:hum
f	" " " labio-dental fricative, e.g. fa:t
v.	" " voiced " " " , e.g. jivzæʒ
ŋ	" " " " " nasal, e.g. mamfu:x
q	" " " emphatic dental plosive, e.g. qa:ʒ
l	" " " " " lateral, e.g. ʒamalqa:liḡ
n	" " " " " nasal, e.g. jundar
ɖ	" " " back denti-alveolar plosive, e.g. qaʒaɖʒa:bir
ʂ	" " " " " fricative, e.g. ʒamaʂʒa:liḡ
ʈ	" " voiceless back denti-alveolar plosive, e.g. taqruḡ
ʂ	" " " " " fricative, e.g. faʂaʒah ^ə ʈu, h
ʃ	" " " emphatic denti-alveolar fricative, e.g. ʃa:liḡ

t	For a voiceless emphatic glottalized denti-alveolar plosive, e.g. t̪a:h̪r
ɖ	" " voiced emphatic denti-alveolar fricative, e.g. qarazɖ:ndb
t	" " voiceless denti-alveolar plosive, e.g. t̪əʒab
s	" " " " " fricative, e.g. səʀh
n	" " voiced emphatic denti-alveolar nasal, e.g. j̪ɪn̪ʂh
l	" " " " " -alveolar lateral, e.g. j̪ɪl̪ʂɪ:
ɳ	" " " denti-alveolar nasal, e.g. j̪ɪnd̪əm
ɭ	" " " " " lateral, e.g. j̪ɪl̪sæʂ
n	" " " alveolar nasal, e.g. nd̪ʂh
l	" " " " lateral, e.g. l̪p̪as
r	" " " " rolled, e.g. r̪p̪ham
ɳ	" " " post-alveolar nasal, e.g. ɳ̪i:h
ɭ	" " " " " lateral, e.g. ɭ̪i:m
ɽ	" " " " " rolled, e.g. ɽ̪i:h
ʃ	" " " palatal plosive, e.g. ʃɛ:b
c	" " voiceless palatal plosive, e.g. cɛ:n
ʃ	" " " " fricative, e.g. ʃɛ:f
ʒ	" " voiced " " , e.g. m̪a:f̪ɪ:ʒzæjjɪ(h)
j	" " " " semi-vowel, e.g. jo:m
g	" " " velar plosive, e.g. xarag̪t̪a:h̪r

- k For a voiceless velar plosive, e.g. $\xi ammak\tau a:h\dot{\tau}r$
- n " " voiced palatal nasal, e.g. $jipjeh$
- ɣ " " " velar fricative, e.g. $\gamma a:b$
- x " " voiceless velar fricative, e.g. $x a:n$
- ŋ " " voiced velar nasal, e.g. $jip\eta ar$
- q " " voiceless uvular plosive, e.g. $qa:m$
- n " " voiced uvular nasal, e.g. $jinqa\Delta\dot{\xi}$
- ʕ " " " pharyngeal fricative, e.g. $\xi a:m$
- ħ " " voiceless pharyngeal fricative, e.g. $ha:m\dot{\tau}d$
- h " " voiced glottal fricative, e.g. $had\dot{x}a:b$
- ʔ " " voiceless glottal plosive, e.g. $\xi anp:b$

b) Vowels:

Short Long

- ɨ ɨ: For a pharyngealized front close vowel,
e.g. $\xi a:\xi imh\dot{u}m$: $\xi i:h$
- i i: For a front close vowel which occurs with a
consonant of Group II, e.g.
 $wa:xidh\dot{u}m$: $xi:b$
- ĩ ĩ: For a front close vowel which occurs after
a consonant of Group III, e.g.
 $mĩnh\dot{u}m$: $bĩ:\xi$
- i i: For a front close vowel which occurs after a
consonant of Group IV, e.g.
 $\xi ind\dot{u}(h)$: $\xi i:b$

Short Long

- i i: For a front close vowel which occurs after
a consonant of Group V, e.g.
liɛba : ni:b
- i i: For a front close vowel which occurs after
a consonant of Group VI, e.g. tiɔba : di:b
- i i: For a front close vowel which occurs after a
consonant of Group VII, e.g.
ciɔba h : ɟi:b
- e: For a pharyngealized front half-close vowel,
e.g. ʃe:f
- e: For a front half-close vowel which occurs with
a consonant of Group II, e.g. ye:m
- e: For a front half-close vowel which occurs after
a consonant of Group III, e.g. be:t
- e₊ For a front half-close vowel which occurs after
a consonant of Group IV, e.g. ʒe:n
- ɜ: For a front half-close vowel which occurs
with a consonant of Group V, e.g. lɜ:l
- ɜ: For a front half-close vowel which occurs
with a consonant of Group VI, e.g. dɜ:l
- ɜ₊ For a front half-close vowel which occurs
with a consonant of Group VII, e.g. ʃɜ:b
- a a: For a pharyngealized back open vowel,
e.g. tabb : ta:b

Short Long

- ʌ ʌ For a back open vowel which occurs with a
consonant of Group II, e.g. ɣamm : qa:m
- ʌ ʌ: For an open vowel which occurs after a
consonant of Group III, e.g. mall : ma:l
- a a: For an open vowel which occurs after a
consonant of Group IV, e.g.
ɣamm : ɣa:m
- ɒ ɒ: For an open consonant which occurs after a
consonant of group V, e.g. lɒmm : lɒ:m
- æ æ: For a front open vowel which occurs after a
consonant of Group VI, e.g. tæmm : də:m
- ɛ ɛ: For a front open vowel which occurs after a
consonant of Group VII, e.g.
fɛmm : fɛ:b
- ə: For a pharyngealized back half-close vowel,
e.g. sə:m
- ɔ: For a back half close vowel which occurs with
a consonant of Group II, e.g. qɔ:m
- ɔ: For a back half close vowel which occurs
after a consonant of Group III, e.g.
fɔ:h
- ɔ: For a back half-close vowel which occurs
after a consonant of Group IV, e.g.
ɬɔ:d

Short Long

- o: For a back half-close vowel which occurs after a consonant of Group V, e.g. ʎo:m
- o: For a back half-close vowel which occurs after a consonant of Group VI, e.g. tɔ:b
- o: For a back half-close vowel which occurs after a consonant of Group VII, e.g. co:m
- u u: For a pharyngealized back close vowel, e.g. ʎulʔumʔ h : ʂu:m
- u u: For a back close vowel which occurs with a consonant of Group II, e.g. ʎumma h : ʎu:ɾ
- ü ü: For a back close vowel which occurs after a consonant of Group III, e.g. bʊɾɾʊ (h) : mü:t
- u u: For a back close vowel which occurs after a consonant of Group IV, e.g. ʎumɾʊ (h) : ʎu:m
- ü ü: For a back close vowel which occurs after a consonant of Group V, e.g. ʎʊbɾʊ (h) : ʎü:l
- u u: For a back close vowel which occurs after a consonant of Group VI, e.g. tʊɾbʌ (h) : tu:ʔ
- ü ü: For a back close vowel which occurs after a consonant of Group VII, e.g. ʂʊɾbʊ (h) : ʂü:ɛ

Short Long

e For a variety of central vowels which can be stated under two terms: The anaptyctic and the VC vowels. These are differentiated in transcription by the position of the symbol in relation to the line; the former is higher up, and the latter at the level of the other symbols.

All **transcription** in the phonetic section ^{and the appendices} is phonetic; when there is phonetic transcription in the phonological section, it is underlined with red.

c) Symbols of features:

- (̤) For glottalization
- (h) For aspiration
- < For the opener quality of the close vowel in the final syllable in the word and the spoken group, (put under the symbol).
- (~) For nasalization (above the symbol).

2. Phonological symbols:

- ɿ For a voiceless glottal plosive unit, e.g. ɿanɿd
- b " " voiced bilabial " " , e.g. bdab
- t " " voiceless denti-alveolar plosive unit, e.g. tɿdɿb
- ɟ " " voiced palatal plosive unit, e.g. ɟɿdɿb

h	For a voiceless pharyngeal fricative unit, e.g. <i>hāar</i>
x	" " " velar fricative unit, e.g. <i>xaab</i>
d	" " " voiced denti-alveolar plosive unit, e.g. <i>daab</i>
r	" " " alveolar rolled unit, e.g. <i>raah</i>
z	" " " denti-alveolar fricative unit, e.g. <i>zaam</i>
s	" " " voiceless denti-alveolar fricative unit, e.g. <i>saab</i>
ʃ	" " " palatal fricative unit, e.g. <i>ʃaab</i>
ʒ	" " " emphatic denti-alveolar fricative unit, e.g. <i>ʒaab</i>
q	" " " voiced emphatic dental plosive unit, e.g. <i>qaaz</i>
t	" " " voiceless emphatic denti-alveolar plosive unit, e.g. <i>taab</i>
ʕ	" " " voiced pharyngeal fricative unit, e.g. <i>ʕaab</i>
y	" " " velar fricative unit, e.g. <i>yaab</i>
f	" " " voiceless labio-dental fricative unit, e.g. <i>faal</i>
q	" " " uvular plosive unit, e.g. <i>qaam</i>
c	" " " palatal plosive unit, e.g. <i>caan</i>
l	" " " alveolar lateral unit, e.g. <i>laam</i>
m	" " " bilabial nasal unit, e.g. <i>maal</i>
n	" " " alveolar nasal unit, e.g. <i>naal</i>
h	" " " glottal fricative unit, e.g. <i>haan</i>
w	" " " bilabial semi-vowel unit, e.g. <i>waʔad</i>
j	" " " palatal " " " , e.g. <i>joom</i>

C H A P T E R I V .

The Polysystemic Character of Language .

--- --- ---

THE POLYSYSTEMIC CHARACTER OF LANGUAGE.

A spoken group is a succession of sounds or a chain of sounds and therefore it is the material for phonetic studies at a descriptive level. But when the system of relations between these sounds is the material of study, the level is phonological. Unlike sounds, relations are not physical or psychological entities, and even in that sense, a phonological unit is a relation between mutually exclusive sounds. They are concepts not objects and technical devices for linguistic handling not components of the actual chain of utterance. Language study can be studied at various levels and through a set of related techniques. Systems are creations not discoveries, and every student of language should be able to exercise his creative ability. For the purpose of this work a brief account of words, morphological types and syntactic categories will be given before the detailed phonetic description and the study of the phonological systems.

Words, morphological types, prosodies, syllables and sound-units fit into appropriate systems which are interdependent, and each of which is made of similar complementary and co-functioning units. Thus the 'systematic' study of the dialect is necessary to

establish a 'systemic' framework composed of allied 'systems'. Prof. Firth differentiates between the use of 'systematic' and that of 'systemic'. By the former, I think, he means (ordered - put in a definite pattern - arranged) and by the latter (composed of systems - related to systems). The following quotations may illustrate this: 'But we may apply systematic categories to the statements of facts. We must separate from the mush of general goings-on those features of repeated events which appear to be parts of a patterned process, and handle them systematically by stating them in the spectrum of linguistics techniques. The systematic statements of meaning produced by such techniques need not be given existent status.'¹ It is this plurality of the number of systems, as can be seen above, that justifies describing language as 'polysystemic'.

1. Firth, Personality and Language in Society, p.50.

C H A P T E R V .

Notes on Grammar .

-- --

' ' W O R D ' '

The concept of 'word', as some other linguistic concepts is not universally defined. Scholars have attempted to produce universal definitions of it, but so far none of these has been above criticism. In Arabic linguistic literature, definitions are found that either confuse 'word' with 'utterance', such as submitting that ' a word is a single utterance',¹ which is true of a spoken group; or coupling this confusion with building the definition on the relation between 'word' and 'idea', such as claiming that 'a word is an utterance conventionalized for a single idea'.² Put in the light of modern linguistic thinking, these two definitions, like many of their contemporary ones, are faulty on the ground of :

- 1 - not recognizing the difference between 'sound' and 'unit', and
- 2 - confusing function with logical thinking.

Answering the question (What is a word ?), modern scholars indulge in discussing issues like

- a) are words linguistic or phonetic units ?
- b) how to establish criteria for word-delimitation ?

1. Al Ashmuni, Sabban's Commentary. Vol.I.p. Cairo.No
date.
2. Ibnu Agl, Sugāi's Commentary, Vol.Ip.6., Cairo 1322 A.H.

In defining 'word', Bloomfield says 'a word is a minimum free form'.¹ This freedom can be criticized for ambiguity, since he does not state what sort of freedom it is. If freedom means capability of isolation, word-sentences share this character with words and can also be described as the minimum isolable of their forms.

Sapir writes 'The true, significant elements of language are generally sequences of sounds that are either words, significant parts of words or word-groupings. What distinguishes each of these elements is that it is the outward sign of a specific idea, whether of a single concept or image or a number of such concepts or images definitely connected into a whole.'²

This amounts to saying that a word is a sequence of sounds and the outward image of a specific idea which is reminiscent of what the two Arab scholars said .

Meillet states : 'Un mot est défini par l'association d'un sens donné à un ensemble donné de sons susceptibles d'un emploi grammatical donné'.³ This definition can be applied to sentences and phrases as well. What is more

1. Language, London, 1934, p.178.

2. Language, New York, 1921, p. 25.

3. Meillet, Linguistique Historique et Ling.Génér.

grammatical usages are concerned with categories rather than words, phrases and sentences.

According to Gardiner 'Words are two-sided in their nature, one side being that of meaning or sense, and the other that of sounds.'

'As words exist in the possession of every individual, they are physical entities, comprising on the one hand an area of meaning, and on the other hand the image of a particular sound susceptible of being physically reproduced whenever wanted. In reality, they are wholly physical, matters of knowledge and learning, though on one side of their nature they point to a physical occurrence reproducible at will.'¹ This is a Cartesian dualism influenced by Saussurean linguistics but boldly taking refuge in psychological vagueness. A student of linguistics need not establish his thinking on the alien ground of psychology. The whole interpretation above is built on metaphors rather than linguistic terms. Notice the use of 'reality', 'possession', 'knowledge' and 'learning'.

Words are considered linguistic, not phonetic, units by all even those who confuse 'word' with 'utterance'

1. Gardiner, Speech & Language, pp.69-70.

Jespersen states : 'Words are linguistic units, but they are not phonetic units.'¹ Bloomfield writes : 'The word is not primarily a phonetic unit: we do not, by pauses or other phonetic features, mark off those segments of our speech which could be spoken alone. In various ways, however, different languages give phonetic recognition to the word unit; some, like French, very little, and others, like English, very much.'²

Jespersen shows that purely phonetic criteria are not capable of word delimitation.³ 'Added to the ''feel'' of the word are frequently, but by no means invariably, certain external phonetic characteristics⁴....They are 'useful as aids in the external demarcation of the word.'⁴ 'The word bears within itself the sign of its use and the expression of its morphological value; it has a completeness which leaves nothing to be desired.'⁵

The delimitation of the word in the sequence requires a complex of processes and techniques the most important of which are (a)isolation, (b)elision, (c)insertion,

-
1. Jespersen, The Philosophy of Grammar, London.1948.p.92.
 2. Bloomfield, Lang. 181.
 3. Jespersen, The Philosophy of Grammar - pp.92-5.
 4. Sapir, Lang. - pp.35-6.
 5. Vendryes,Lang. - p.89.

(d)transposition, (e)interpolation ~~and~~ (f)the employment of positions markers (i.e. prosodical features), ~~and~~ (g)substitution in the text, to determine its limits. The notion 'word' is one of the fundamental concepts of language which seem difficult to define on universal basis. Vendryes states : 'Owing to the variety of morphological processes, the term word must be differently defined for each language.'¹ Alan S.C.Ross writes: 'It seems then that it is not possible to define the concepts, sentence, word, morpheme and part of speech in a manner as to apply to all languages.'²

This introductory shows the need to avoid treating the A.D. word in the light of a definition the application of which is claimed universal, and to follow the opposite course of treating the dialect on its own merits. A word of A.D. can be described as follows :

1. - It is composed of three radicals which are ascertainable in the formal scatter, eg. cf

qarab ,	:	qaal ,
qaarib ,	:	qaajil ,
qarraab ,	:	qawwaal.

2. - It is capable of being described as affixed, eg.

juqrubuh	:	juquuluh.
----------	---	-----------

1. ibid p. 105.

2. Acta Ling. IV, 3, 1944. p.105.

3.- A word is also capable of fitting in a typical morphological form (see pp.56-57) e.g.

qarab and qaal (both ^{are} of the type fa-al.)

4.- A word is similarly capable of isolation as in the two forms above.

5.- Such word is capable of functioning both syntactically and lexically, eg. ^aqarb and qaal are syntactical exponents of verbal morphemes (see pp.69-78) and can function as word units both horizontally and vertically which is lexical in a sense.

A definition of the A.D. word is not going to be attempted, but the above descriptions of this word may serve the purpose of one.

MORPHOLOGICAL TYPES.

The word *type* in the heading above means a formal word-measure composed of the three consonants f, ç, and l respectively. This formula is designed in a manner that allows the 'f' of 'f-ç-l' to oppose the first radical, 'ç' the second and 'l' the third radical in the instance. The vowel framework in the type, as well as affixation, will be identical with, i.e. reproduction of, that found in the instance. Compare, for example, the following types and instances :

faaçil	:	qaatil.
mustafçil	:	mustaxriç
estifçaal	:	estixraaç
enfiçaal	:	ençilaacaq.

The total sum of these types represents the morphological framework of the dialect, and every word in A.D. must fit in one or the other of these types. Apart from very few exceptions, whatever type of these is selected will immediately show whether it is a verbal or a nominal form; furthermore. it shows which it is among the verbal or the nomenal types. When these types are put in paradigms and formal scatters, they should represent a general morphological statement of the dialect. The cohesion and regularity of association of a given type with a certain other, makes it possible to attempt

stating, in typological paradigms, both the conjugation of verbals and the inflexion of nominal forms without the aid of actual verbs and nouns; such, however, would be a paradigm of a second order. In fact, what is attempted under this heading is nothing but giving typological paradigms supplied with instances for the sake of illustration rather than ^{for} justifying the paradigms. To make this point clear, it can be stated that the relation between 'faḥal' and 'juḥul' as two related verbal types is instanced by that between the two tenses 'naḥar' & 'junḥur' as also in 'catab' and 'juctub' and 'laḥaf' and 'julḥuf' - 'satar' and 'justur'. Similarly the position of 'faḥil' to 'maḥuul' is illustrated by that of 'qaarib' to 'maḥruub' and 'raacib' to 'marcuub'.

The typological paradigms on the following page can be established for the dialect.

No.	Noun types	Examples	Broken pls.	Examples	Remarks.
1	fiɛl	himl	ʕafɛaal + fuɛuul +	aħmaal ħumuul	1-Forms with (+) are suitable as plurals of more than one singular type
2	faɛl	ɛabd	faɛiil * fiɛaal *	ɛabiid ɛibaad	
		ɟarħ	fuɛuul +	ɟuruuh	
		saɟr	ʕafɛul	ʕasɟur	
3	fuɛl	qufl	ʕafɛaal + fuɛuul +	ʕaqfaal qufuul	2-Forms with (*) are suitable as plurals of more than one of the singular types and also as a singular type
4	fiɛaal *	himaar	faɛiil *	ħamiir	
		citaab	fuɛul +	cutub	
5	faɛiil *	qaɟiib	fuɛlaan	quɟbaan	
6	faaɛil	ɛaalim	fuɛalaa	ɛulamaa	
		ɟaahil	fuɛaal	ɟuhhaal	
7	faɛal	sabab	ʕafɛaal +	ʕasbaab	
		ɟamal	fiɛaal *	ɟimaal	
8	faɛaal	sahaab	fuɛul	suhub	
9	faaɛuul	ɟaasuus	fawaaɛiil	ɟawaasiis	
10	fuɛaal	suɛaal	ʕafɛila	ʕasɛila	
		ɟuɟaaɛ	fuɛlaan +	ɟuɟaan	

also
fuɛaalaat
(suɛaalaat)
(see suffix
'aat').

There are quadrilateral forms in the dialect which also have broken plurals and which should be listed as well. The reason why these were not given in the above list is that a special account has to be given of them in relation to the trilateral character of the dialect. We have assumed somewhere else in this work that A.D. words have three radicals; how are we going to account for the number of quadrilateral nouns in the dialect is seen in the following lines. There are three quadrilateral types in A.D. which have the same typical form as plural; 'faṭaalil'. These types are :-

No.	Noun types	Examples	Broken pl.	Example	Remarks.
1	fiṭlil	filfil	faṭaalil	falaafil	The plural
2	faṭlal	marmar	"	maraamir	form is
3	fuṭlul	ḡulḡul	"	ḡalaaḡil	identical.

The explanation of these forms is that they are reduplications of the first syllable which when analysed as a repeated entity will be referred to the three radicals 'f-l-l', 'm-r-r' and 'ḡ-l-l' respectively, thus brought in line with the radical principle. There are foreign words imported in the dialect which are given this form, but not reduplicated such as 'santar' (centre) and 'tumbul' (some sort of spice); such words would not,

I think, affect this principle.

There remain to be listed some affixed words and their broken plural. These will appear as follows :-

No.	Noun types	Examples	Broken pl.	Examples	Remarks.
1	ʕafʕal	ʕahmar	fuʕl	humr	
2		ʕafqal	ʕafaaʕil	ʕafaadil	
2	tafʕiil	taʕriih	tafaaʕiil	taʕaariih	also 'taʕriihaa
3	mafʕal	maʕam	mafaaʕil	maʕaaʕim	
4	fiʕla	qirba	fiʕal	qirab	
5	fuʕla	cubba	fuʕal	cubab	
6	faʕiila	qabiila	faʕaajil	qabaajil	
7	faaʕila	haadita	fawaaʕil	hawaadit	
8	fuʕlija	durrija	faʕaalii	daraarii	
9	faʕlaan	sacraan	faʕaalaa	sacaaraa	also 'sacraani

Other ways of forming plurals is discussed in the affixes.

THE VERBAL TYPICAL FORMS.

In the following treatment of the verbal typical forms we are dealing with what is better called the 'form of quotation'. This form of the third person is masculine singular in all tenses. It is chosen as a form of quotation because it is devoid of suffixation, and, therefore, it is easiest and clearest to give insight in the relation between different forms for tenses. This type is characterised by the presence of 'a' in its final syllable of the perfect, whatever the structure of the perfect of this type. Verbals are of three types:

- a) the unaffixed triliteral,
- b) the affixed triliteral, and
- c) the quadriliteral.

Each will have a separate treatment.

a) The unaffixed triliteral.

This type is chiefly uniform in the perfect, the present participle and the past participle, but it varies in the imperfect and the imperative of its forms. In the perfect, it is 'faʿal', in the present participle 'faʿāil' and in the past participle 'mafʿūl'. Verbal nouns and adjectives of this type are numerous and are listed on the same page with the forms of this type (see table) *fol. p. 57.*

b) The affixed triliteral.

By affixation here is meant prefixation and infixation. No suffixes are found in the form of the third person masculine singular. Prefixes are found to be either 'e', 'et', 'en' 'a' or 'esta'; infixation is invariably with 'ta' as can be seen in the table of this type, (see table) *coll.* p. 51.

c) The quadriliteral.

Here we come to the radical-principle in which it is suggested that a word of A.D. has three radicals. To reconcile this principle with the forms found among verbals that are described as quadriliteral, the following must be stated;

. The quadriliteral forms are either :

a) reduplications of one syllable which if analysed as an independant entity will be referred to three radicals, eg.

jarjar	=	jarr	radicals	j - r - r.
habhab	=	habb	"	h - b - b.
laflaf	=	laff	"	l - f - f.

It is significant that the forms opposed here have the same meaning but the reduplicated form has an additional sense of repetition of action. Both are used in the dialect.

b) forms that have trilateral equivalents in the dialect used side by side with them, but the quadrilateral forms have one of their consonants which if dropped can be related to the trilateral forms as can be seen below :

barfaʕ	rataʕ	r - t - ʕ
zahlaq	zalaq	z - l - q
dahraʃ	daraʃ	d - r - ʃ
hardam	hadam	h - d - m
ʃaqlab	qalab	q - l - b
baʕtar	batar	b - t - r
marmaʃ	maraf	m - r - ʃ
dalwaq	dalaq	d - l - q

c) forms with the middle radical doubled (faʕʕal), eg.

ʃammaʕ	ʃamaʕ	ʃ - m - ʕ
sammaʕ	samaʕ	s - m - ʕ
ʃarraḥ	ʃarraḥ	ʃ - r - ḥ
ḥarram	ḥaram	ḥ - r - m

The radicals quoted above are thought to apply to both the trilateral and quadrilateral forms, and therefore, this latter form has an augmented consonant which is not radical but introduced for some additional sense.

These quadrilateral forms can be affixed, and in the same table they will be followed by their affixed forms.

THE TRILITERAL TYPES

TYPE 1. Perfect.	TYPE 2. Imperfect.	TYPE 3. Imperfective.	TYPE 4. Present Partic.	TYPE 5. Past Partic.	TYPE 6. Verbal Noun.	TYPE 7. Adjective.	TYPE 8. Ex.	R	E	M	A	R	K	S.
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal

Intensive. It should be noted that:
 1- other adjectival forms are:
 faḡal, eg. Sawis, faḡal, agurich
 and faḡal, eg. faḡal.
 Intensive. These have no adjectival forms and so
 are forms other than the triliteral type.
 2- other verbal forms are:
 faḡal, eg. faḡal,
 faḡal, eg. faḡal,
 and faḡal, eg. wiladaa.
 3- intensive and intensive in
 intensive. This context denotes different concepts
 from that implied by the term
 "intensive relation".

THE AFFIXED TRILITERAL TYPES

TYPE 1. Perfect.	TYPE 2. Imperfect.	TYPE 3. Imperfective.	TYPE 4. Present Partic.	TYPE 5. Past Partic.	TYPE 6. Verbal Noun.	TYPE 7. Adjective.	TYPE 8. Ex.	R	E	M	A	R	K	S.
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal

1- Notice the similarity in the past following the prefix in
 the imperfect and the present participle forms.
 2- faḡal and faḡal have verbal nouns that are
 identical with the related unaffixed triliteral form,
 eg. faḡal, like faḡal, has wiladaa,
 and faḡal, like faḡal, has faḡal.

THE QUADRILITERALS AND THEIR AFFIXED TYPES

TYPE 1. Perfect.	TYPE 2. Imperfect.	TYPE 3. Imperfective.	TYPE 4. Present Partic.	TYPE 5. Past Partic.	TYPE 6. Verbal Noun.	TYPE 7. Adjective.	TYPE 8. Ex.	R	E	M	A	R	K	S.
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal
faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal	faḡal

There are no past participle for the two latter forms;
 their verbal nouns are the same as in the two former
 respectively.

AFFIXATION.

By affixation here is meant prefixation, infixation and suffixation in verbals and nouminals. In studying the A.D. word and its description, use has been made of the term affixation without giving the exact definition of this term. Here we are trying to give a detailed description of this process as found in the word which will suffice to illustrate it. As has been stated above, affixation covers :

a) prefixation, b) infixation and c) suffixation.

The following detailed description of these ^{is a} in the following order :

a) Prefixation: (I) in the verbals:

1) The Perfect:

There is prefixation in a large section of the perfect of the triliteral type. In the affixed forms of this type the following prefixes are found :

(see tables).

•	:	eftaḡal	eḡtaram.
sa	:	saḡḡal	saḡaram.
et	:	etfaḡal	etwalad.
	:	etfaaḡal	etqaatal.
en	:	enfaḡal	encasar.
esta	:	estafḡal	estaxraḡ.
etma	:	etmaḡḡal	etmarfal.

In the prefixed of the affixed form of the quadrilateral, 'et' is the prefix in both the forms found eg.

et	:	etfaḡḡal	etḡallam.
	:	etfaḡlal	etqalḡab.

2) In the Imperfect:

The imperfect of the triliteral form is prefixed with 'ji' in all cases except when the vowel of the second syllable is 'u' then the prefix is 'ju'. This however, is the case for the third person masculine singular, for other persons see conjugation of the forms accompanying this section.

In the affixed triliteral the following is found :

ji	jifḡil	jicrim
	jiftaḡil	jiḡtarim
jit	jitfaḡil	jitwalid
	jitfaaḡal	jitqaatal
jin	jinfāḡil	jincasir
jista	jistaḡal	jistaxraḡ
jitma	jitmaḡal	jitmarfal.

Variation of the prefix for other persons is also found in the conjugation of the imperfect forms accompanying this section.

The two prefixes 'ji' and 'jit' are used in the quadrilateral and its affixed form respectively.

j1	jifaʒʒil	jizallim
	jifaʒlil	jigalʒib
jit	jitfaʒʒal	jitʒallam
	jitfaʒlal	jitqalʒab.

other variations will be found, according to persons, in the accompanying conjugations. All the above lists are for the third person masculine singular.

3) the imperative :

In the trilateral only 'e' is found in the imperative,

e	efʒal	efmaʒ
	efʒil	eflis
	efʒul	eqrub

In the affixed forms of the trilateral the following is found :

e	efʒil	ecrim
	eftaʒil	ehtarim
et	etfaʒil	etwalid
	etfaaʒal	etqaatal
en	enfaʒil	encasir
esta	estaʒal	estaxraʒ
etma	etmaʒal	etmarfal

There are no prefixes in the plain quadrilateral but in its affixed form et is found, eg.

et	etfaʒʒal	etʒallam
	etfaʒlal	etqalʒab

4) The present participle.

In the trilateral form there is 'mu' in 'mufaaḡil'
eg. 'muḡaatil', but in the affixed trilateral type, the
following is found :

mu	mufḡil	mucrim
	muftaḡil	muḡtarim
mut	mutfaaḡil	mutḡaatil
mun	munfaḡil	muncasir
musta	mustafḡil	mustaxriḡ
mutma	mutmafḡil	mutmarfil

The two prefixes 'mu' and 'mut' are also found in the
quadrilateral and its affixed form respectively

mu	mufaḡḡil	muḡallim
	mufaḡlil	muḡalḡib
mut	mutfaḡḡil	mutḡallim
	mutfaḡlil	mutḡalḡib.

5) The Past participle.

In the trilateral form the prefixes are :

ma	mafḡuul	maḡruub
mu	mufaaḡal	mubaarac.

In the affixed trilateral forms this either :

mu	mufḡal	mucrah	
	muftaḡal	muḡtaram,	or,
musta	mustafḡal	mustaxraḡ	

The 'mu' is also the prefix of the plain quadriliteral.

'mu'	mufaḡḡal	muḡallam
	mufaḡlal	muqalḡab.

6) The Verbal Noun :

No affixation is found in the plain triliteral form. In its affixed forms the following are found :

ṣi	ṣiḡḡaal	ṣicraam
o	oḡtiḡaal	oḡtiraam
on	onḡḡaal	onḡisaar
oṣti	oṣtiḡḡaal	oṣtiḡraaḡ
ma	maḡḡala	maḡfala.

II: In the nominals :

In the nominals only ' a' and 'ma' and 'ta' are found, eg.

ṣa	ṣaḡḡal	ṣacram,
	ṣaḡḡaal	ṣaḡmaal,
	ṣaḡḡila	ṣaḡila,
	ṣaḡḡul	ṣaḡtur,
ma	maḡḡal	maḡḡam,
ta	taḡḡiil	taḡriih.

The first and last examples are singulars; the rest are plurals.

sahtarim	saftah	saqrub
sahtarim	saftah	saqrub
nihtarim	niftah	nuqrub
tihtarim	tiftah	tuqrub
tihtarimii	tiftahii	tuqrubii
tihtarimuu	tiftahuu	tuqrubuu
jihtarim	jiftah	juqrub
tihtarim	tiftah	tuqrub
jihtarimuu	jiftahuu	juqrubuu

saftaxraf	saftah
saftaxraf	saftah
nistaxraf	niftah
tistaxraf	tiftah
tistaxrafii	tiftahii
tistaxrafuu	tiftahuu
jistaxraf	jiftah
tistaxraf	tiftah
jistaxrafuu	jiftahuu

saftallim	saftah
saftallim	saftah
niftallim	niftah
tiftallim	tiftah
tiftallimii	tiftahii
tiftallimuu	tiftahuu
jiftallim	jiftah

tigallim	titgallam
jigallimuu	jitgallamuu

In the paradigm of the imperfect, there is similarity in the forms of :

- (1) the two first persons singular
- (2) the second person singular masculine and the third singular feminine.

b) Infixation :

This is only found in the affixed triliteral forms of 'eftaḡal' and its derivatives, as follows :

ta	eftaḡal	əhtaram
	jiftaḡil	jihtarim
	əftaḡil	əhtarim
	muftaḡil	muhtarim
	muftaḡal	muhtaram
ti	əftiḡaal	əhtiraam.

c) Suffixation:

In treating morphological types, we have chosen the form of the third person masculine singular and called it the form of quotation. This form served to illustrate the relationship between it and its associate types. Here the verbals are to be treated on different ground : the suffixes and their function. Verbals will be treated first and then nominals. There are two kinds of suffixes :

(1) Pronominal Suffixes.

(2) Nominal Suffixes.

(b) Before entering into the treatment of the pronominal suffixes we feel it significant to list the personal pronouns; it will be found that though these are not identical with the pronominal suffixes, an affinity between the two kinds can be established. The personal suffixes are as follows :-

1st.	Masc. Sing.	ʃanaa.	=	I
	fem. ''	ʃanii	=	I
	Masc.& fem. plural.	niḥnaa	=	we
2nd.	Masc. Sing.	ʃant or ʃanta	=	you
	fem. ''	ʃanti.	=	you
	Masc.& Fem. plural.	ʃantu.	=	you
3rd.	Masc. Sing.	huu .	=	he
	fem. ''	hii .	=	she
	Masc.& Fem. plural	hum.	=	they

There are three types of pronominal suffixes :

- a) subject suffixes.
- b) object suffixes.
- c) genitive suffixes.

a) The first type is illustrated in the following paradigms : -

	1.	M.S.	qarab t	
	1.	F.S.	qarab t	
	1.	M.&F.P.	qarab naa	
	2.	M.S.	qarab t	
Perfect.	2.	F.S.	qarab tii	
	2.	M.&F.P.	qarab tuu	
	3.	M.S.	qarab	(the quotation form)
	3.	F.S.	qarab at	
	3.	M.&F.P.	qarab uu	
	1.	M.S.	saqrub	
	1.	M.S.	saqrub	
	1.	M.F.Pl.	nuqrub	
	2.	M.S.	tuqrub	
Imper-	2.	F.S.	tuqrub ii	
fect.	2.	M.F.Pl.	tuqrub uu	
	3.	M.S.	juqrub	(associate of
	3.	F.S.	tuqrub	quotation form).
	3.	M.F.Pl.	juqrub uu	
	2.	M.S.	oqrub	
Imper-	2.	F.S.	oqrub ii	
ative.	2.	M.F.Pl.	oqrub uu	

Since only the second person is addressed by the imperative the paradigm is only of three forms instead of nine. Of these, the singular feminine and the plural are suffixed 'ii' and 'uu' respectively as in the imperfect. In this latter the third person plural is suffixed 'uu'.

b) The second or (object suffixes) type is illustrated in the following paradigm :

The object suffixes	qarab naa	
	qarab nii	
	qarab nihnaa	
	qarab ac	notice the
	qarab ic	affinity of some
	qarab cum	of the suffixes to
	qarab u	the personal pronouns.
	qarab i	
	qarab hum	

c) The third type may be given as follows :

ʒamal ii	ʒamal cum
ʒamal ii	ʒamal u
ʒamal naa	ʒamal i
ʒamal ac	ʒamal hum
ʒamal ic	

(2) Nominal suffixation can be summed up in the following :

a) For dual : een is uniform, eg. famaleen.

b) For the ^{second} ~~sound~~ masculine plural

(of nouns without broken plural),

iin is the suffix, eg. muslimiin.

c) For the feminine plural and the ~~broken~~ ^{some masculine} plural of words 'aat' is found,

eg. muslimaat

hisaabaat

raadjuuhaat.

d) The suffixes for feminine singulars are :

(1) a , eg. baqara,

(2) aa , eg. dunjaa.

But when this feminine is in the genitive, the sign is ' at ', eg.

baqaratii,

baqaratii,

baqaratnaa,

baqartac,

baqaratic,

baqaratcum,

baqaratu,

baqarati,

baqarathum.

REMARKS ON SYNTAX.

The A.D. word has been described as capable of fitting in a pattern of morphological type, of affixation, of isolation and of functioning lexically and syntactically (see p.49) The morphological types have been given, the affixes listed and now an attempt is being made to illustrate the syntactic function of words.

Before stating the findings on syntactic functions, the following terms must be defined as used in this discussion.

a) Category, b) morpheme and c) exponent.

a)'Category' is a general linguistic term; general but not universal. To use the Saussurean terms, it is used in reference to 'langage' but not to 'langue'. A category is a classificatory device of which one cannot talk in existential terms. A system of categories can be set up in the study of language which finds expression in morphemes.

b) 'Morpheme' is a structural term which should not be notionally handled. It is not a segment but a unit in a system of morphemes. The system of morphemes is related to the system of categories. This cannot, in Arabic, be logically described as one-to-one relation; this may be possible, for example, in Turkish. A word is a bundle of morphemes, i.e. of units in a system of morphemes which

cannot always be correlated to segmental exponents.

c) An 'exponent' is the formal expression of a morpheme which is to be found in the utterance. It is segmental and can be expressed in negative as well as positive terms, since there may be a 'zero-exponent'. The word-units expressed in the typical morphological forms together with formative affixations are the total system of exponents, i.e. formal expression of morphemes, in the Aden dialect.

The separation between morphology and syntax is only a technical convenience; the tendency is now for bringing them closer together as the material they handle is one. We know that syntax is the study of relations between categories and that morphology is a structural study. The close relation between the three systems of categories, morphemes and exponents has been expressed in the above definitions of these terms. This may illustrate the close relation between syntax and morphology.

An utterance can be treated as a pattern of morphological exponents, having order and concord. The order may be free or fixed, the concord is formally expressed. Descriptive grammar must show the syntagmatic cohesion of the forms in the utterance, partly expressed by order and partly by concord. This is taken as the

supreme factor in syntactic analysis. Such an approach, which recognises segmental exponents (not segmental morphemes), leads to a technique of syntax which avoids the postulating of a one-to-one relation between category and segment, that is adopted as the criterion of stating the findings of Mr. Zellig S. Harris in his *Methods In Structural linguistics*.

The category 'verbal' is operative in every sentence of the A.D. speech. The morpheme 'verbal' is not to be understood as 'verb', since it can be abstracted from the utterance as a whole. To illustrate this, let us consider the following examples :

- 1 - el ʃamal ʃarah
- 2 - el ʃamal ʃigrah
- 3 - el ʃamal ʃaarih
- 4 - el ʃamal maʃruuh
- 5 - el ʃamal ʃariih

In every sentence of these, there is an operative category of verbal which finds expression in a morpheme that is not a segment but a unit abstracted from the utterance. To illustrate this further, let us make the following contrasts :

- Sentence No. 3. el ʃamal ʃaarih : el ʃaarih hadar,
 " " 4. el ʃamal maʃruuh : el maʃruuh qaam,
 " " 5. el ʃamal ʃariih : el ʃariih maat.

The word 'ḡaariḡ', 'maḡruḡḡ', and ḡariḡḡ' cannot be treated as morphemes expressing the category verbal, since they can occur with 'el' as in the latter set of examples above. The morpheme verbal is to be abstracted from the utterance as a whole. The examples :

elḡmal	elḡaariḡ
elḡamal	elmaḡruḡḡ
elḡamal	elḡariḡḡ

are not sentences, because, though they are reminiscent of the sentences Nos.3, 4 and 5 above, no verbal morpheme can be abstracted from these examples. Therefore, they are classified as nominal phrases. The category 'nominal' is not operative in the A.D. sentence; neither is the category 'formative'.

So far three categories have been given :

- 1 - Verbal,
- 2 - Nominal,
- 3 - Formative.

These three form a 'structural' system of categories' which finds expression in a system of structural morphemes the possible exponents of which have been listed (pp. 73 - 74).

Some sound features may be exponents of more than one morpheme. For example, from 'el bint qaamat', where two morphemes can be abstracted; the morpheme of 'singular

and that of 'feminine; the former is an expression of the category of number, the latter of gender. Both are formally expressed with the same exponent which is the utterance. A syntactic system of categories will include : gender, number and person. Thus, we have counted two systems of categories and two systems of morphemes; one structural, the other syntactic.

There is a third system categories which can be based on word-order which comprises substantive, adjective and genetive. It will be seen later that a substantive is placed before either of the two latter in any given order. The three systems are as follows :-

1-Structural:

- a) Verbal
- b) Nominal
- c) Formative

2-Syntactic:

- a) Gender
- b) Number
- c) Person

3-Order:

- a) Substantive
- b) Adjective
- c) Genetive.

- 1 a is related to the morpheme verbal
- 1b finds expression in the morpheme nominal of which the system of order is a subdivision.
- 1 c correlates with the morpheme formative.
- 2 a is expressed by the morphemes masculine and feminine.
- 2 b by the morphemes singular, dual and plural.
- 2 c by first, second and third persons.
- 3 a finds expression in the morpheme substantive.
- 3 b in the morpheme adjective
- 3 c in the morpheme genetive.

1, 2 and 3, as detailed above are summaries of systems of morphemes. The system of exponents have been listed on pp. 50 - 57 . Such statement of this morphemic analysis is necessary for syntactic study, the more so because any morphemic analysis that ignores morphologic prosody is apt to employ arbitrary criteria that personify forms and describe them in terms ^{of} morphological change (such as this form has changed to that). If such approach to morphological questions suited any agglutinative language, it will not suit Arabic with the complexity of its inflexion. Some scholars force on a language a technique that works in another. Such is Mr. Zellig Harris, who forces his technique of segmentation on the morphology of Classical and Moroccan Arabic. Unlike Mr. Harris's ¹ the morphemes of this work are neither staggered phonemes nor repetitive sequences as he claims his to be in eg. 'C.A. K-t-b and Moroccan Arabic l...l = the', respectively.² Neither of these examples is an utterance and therefore, need not be discussed beyond saying that it is deliberately divorced from its appropriate linguistic context for the sake of 'segmental analysis'.

1. Methods in Structural Linguistics - pp.165-7.

2. Neither of the two forms is used in either language.

In the dialect, the following orders are found.⁽¹⁾

s + v	el walad qaam
v + s	qaam el walad
s + v + s	el walad darab el bint
	or el bint darabat el walad
v + s + s	darab el walad el bint
	or darabat el bint el walad
s + a + v	el jamal el jariih harab
v + s + a	harab el jamal el jariih
s + g + v	jamal el jariih harab
v + s + g	harab jamal el jariih

The 'f' can precede or follow every symbol in the above combinations, as can be seen in the opposition to the above examples in their order as follows :

el muslimiin juquumuu
 juquumuu el muslimiin
 el muhaarbiin hazamuu el a daa
 el a daa hazamuu el muhaarbiin
 hazamuu el muhaarbiin el a daa
 hazamu el a daa l muhaarbiin
 el muhaarbiin el mahzuumiin hambuu
 harabuu el muhaarbiin el mahzuumiin

(1)

s = Substantive.
 v = Verbal.
 a = Adjectival.
 g = Genetival.
 f = Grammatical.

muhaarbiin el muslimiin ʔalabuu
ʔalabuu muhaarbiin el muslimiin.

Such word order is not wholly, but
partially free. It is free only as far as 'v' and
's' above are concerned.

Concord is a feature of transitive relations between categories, which should not mean multiplicity of exponents. Taking the nominal phrases

ʃamal ʃariih, a wounded camel

əlʃamal əlʃariih, the wounded camel

and the different example ʃamal əlʃariih, (the camel of the wounded), one can abstract concord as a feature of the first two examples, but not of the third. In the first example, concord is expressed with zero exponent, in the second, it is expressed by the presence of a formative. In the third example there is no concord. In fact, a basic opposition can be established between each one and the other of these three examples and between all of these and əlʃamal ʃariih (sentence 5 above).

This means that both concord and zero-concord have functions in transitive relations. The same can be said about these in the paradigm, eg.

ʃanaa (I.m.)	qumt	aquum	---	S T A N D (imperative)
ʃanii (I.f.)	qumt	aquum	---	
nihnaa (we)	qumnaa	nuquum	---	
ʃanta (thout.m.)	qumt	tuquum	quum	
ʃanti (thou.f.)	qumti	tuquumii	quumii	
ʃantu (you)	qumtuu	tuquumuu	quumuu	
huu (he)	qaam	juquum		
hii (she)	qaamat	tuquum		
hum (they)	qaamuu	juquumuu		

The concord is functioning horizontally in the syntagm and vertically in the paradigm. It is this sustaining of the formal relations of exponents that makes a morpheme a function of the utterance as a whole.

PHONOLOGICAL SECTION .

-- -- --

C H A P T E R VI .

Consonants and Vowels .

-- -- --

CONSONANTS AND VOWELS.

DEFINITION.

As in other sciences, linguistics contain certain fundamental concepts, the definitions of which are controversial. Of these concepts, 'word' has already been treated and here, a discussion is attempted of 'consonant' and 'vowel'; not, of course, to evolve a universally acceptable definition, but to throw light on the reliability of the already current definitions of these two terms. There are several bases on which the differentiation between 'consonant' and 'vowel' has been made.

- 1 - physiological
- 2 - acoustic
- 3 - both physiological and acoustic at the same time.
- 4 - function.

From the above items it can be seen that two different levels are involved in the differentiation. The physiological and the acoustic bases ought to treat consonants and vowels as phonetic terms, while function and distribution are systematic, i.e. phonological bases.

Most differentiations between vowels and consonants confuse the two levels, whether adopting one basis or another. The following are examples of definitions or differentiations between the two categories made on the physiological basis :

1 -. 'The main distinction between vowels and consonants is that while in vowels the mouth-configuration merely modifies the vocalized breath - which is therefore an essential element of them - in consonants the narrowing or stopping of the mouth passage is the foundation of the sound, and the state of the glottis is something secondary.'^{*}

2 -. 'La caractéristique d'une consonne est, en autres termes, l'établissement d'un obstacle et le franchissement de cet obstacle, tandis que la caractéristique d'une voyelle est l'absence d'obstacle ou d'empêchement.'⁺

3 -. 'All vowels require that the mouth shall be opened, This opening varies in size, but it is always larger than demanded for consonants.'^{**}

The physiological approach to this differentiation is not only artificial but also unsatisfactory in

* H.Sweet. Primer of Phonetics, p.31.

+ N.S.Tröbetszkoy, Principes de Phonologie, pp. 97-8.

** Vendryes, Language, p.54.

application and practice. It is artificial because it depends on extra-linguistic data that is not only divorced from its appropriate context of physiology, but also ignores 'position' and 'function' as two very important factors. It employs, more or less, an arbitrary statement that fails to obtain verification from experimental phonetics as represented in the palatographic technique. What is more, these physiological technicalities are used to settle the issue at an undefined or rather an unspecified level; this treatment construes both a phonetic and a phonological level. The absence of a clear specification of the level at which the differentiation is attempted makes the inclusion of phonology a possibility at least. Now, if the physiological approach can be related to phonetics, there is no place in phonology for such treatment, since phonological vowels and consonants are phonological units, not organic articulations. It will not be accurate, therefore, to state that a vowel (in the phonological sense) has no obstacle in the way of the air-stream during its articulation, no phonological unit is pronounceable.

Even in phonetics, such a statement is open to criticism on the ground of palatographic evidence. (i.e.,

It is found that some vowels give a wider wipe-off, and necessarily a higher tongue-position and a tighter contact (i.e. obstacle) than the related consonants. This is particularly found to be the case with the A.D. long front-close vowels final in the spoken group as contrasted with the semi-vowel 'j' in the same position (see the front close vowels in the phonetic section). Similarly, any long or short front close vowel in any position can be contrasted in that sense with intervocalic 'j' as in 'hajtʰj: (see palatograms Nos. pp. 56 - 57) .

It is evident, therefore, that such a physiological approach to the differentiation between vowels and consonants is both artificial and unsatisfactory in its application to both phonology and phonetics respectively.

The following are examples of the differentiation between the two categories on an acoustic basis :

- 1- 'Les phoneticiens considerent la consonne comme constituee essentiellement par le bruit que produit le passage de l'air a travers le canal vocal, a l'exclusion du son ou emission de voix qui caracterise la voyelle'.*
- 2- 'The distinction between vowels and consonants is not an arbitrary physiological distinction. It is in reality a distinction based on acoustic considerations, namely on

* J.Marouzeau, Lexique de la Terminologie Linguistique, p.63.

the relative sonority or carrying power of the various sounds.'⁺

Differentiations on the two bases combined have been defined as follows :

3- 'In ordinary speech, a vowel is a voiced sound in the pronunciation of which the air passes through the mouth in a continuous stream, there being no obstruction and no narrowing such as would produce audible friction. All other sounds are consonants.'[×]

4- 'The organs that make up the oral resonance chamber may articulate in two ways. The breath, voiced or unvoiced, nasalized or unnasalized, may be allowed to pass through the mouth without being checked or impeded at any point; or it may be either momentarily checked or allowed to stream through a great narrowed passage with resulting air friction. There are also transitions between the two latter types of articulation. The unimpeded breath takes on a particular color or quality in accordance with the varying shape of the oral resonance chamber.'

Also : 'The oral manner of articulation is naturally not sufficient to define a consonant. The place of articulation must be considered.'^{xx}

⁺. D.Jones, Outline of English Phonetics, p.23.
[×]. J.Ward, The Phonetics of English, p.65.
^{xx}.E.Sapir, Language, p.513.

To begin with, if the physiological organism cannot be applied in this field, neither for the same reasons can physical acoustics, phonological units are unpronounceable and have no acoustic noises; thus a physical approach is unsatisfactory either alone or in conjunction with physiological criteria. Whether separate or together, both criteria are extra-linguistic and cannot be primarily used in defining or differentiating purely systematic linguistic categories as alien to physics as to physiology. If the definition above does not make use of systematic typology, the following certainty does :-

'A vowel is a sound for whose production the oral passage is unobstructed, so that the air current can flow from the lungs to the lips and beyond without being stopped, without having to squeeze through a narrow constriction, without being deflected from the median line of its channel and without causing any of the supraglottal organs to vibrate; it is typically but not necessarily voiced. A consonant, ~~con~~versely, is a sound for whose production the air current is completely stopped by an occlusion of the larynx or the oral passage, or is deflected from the median line of its channel through a lateral opening, or causes one of the supraglottal organs to vibrate.'

*

* Bloch & Trager, Outline of Linguistic Analysis, p.18.

The use of the word 'typically' here suggests phonological handling whereas the differentiation has been made on physiological and physical bases.

The differentiation on the basis of function has also gained the attention of some scholars. Vendryes only recognizes the different functions of one category from that of the other but when it comes to the actual differentiation between the two types, this distinction is not utilized (see his differentiation on physiological grounds, already quoted, which demonstrates the criterion of the degree of mouth opening). Recognizing the difference of function between vowels and consonants, he states : 'Though there may be a difference of function between these two, there is none in the actual nature of sounds and no definite boundary separate them.'⁺ Subsequently, on page 54, he ^oad^opts the criterion alluded to above.

So far, no mention~~s~~ has been made of definitions or differentiations based on deliberate separation between phonological and phonetic levels of treating vowels and consonants so as to produce a dual approach to the question. De Saussure makes such an approach in his use of double terminology, arranged as follows :

+ Kenneth L. Pike, Phonemics, pp. 13-60.

Phonological Terms.

Phonetic Terms.

Sonantes

Voyelles

Consonantes

Consonnes.

He states: 'Les termes des voyelles et consonnes, désignent comme nous l'avons vu p.75 des espèces différentes; sonantes et consonantes désignent au contraire des fonctions dans la syllabe.'

'Cette double terminologie permet d'éviter une confusion qui a longtemps régné. Ainsi l'espèce est la même dans 'fidèle' et dans 'pied': c'est une voyelle; mais elle est sonnante dans 'fidèle' et consonante dans 'pied'.

The text continues (pp.88-9) : (nous avons vu que par exemple 'y' et 'w' ne sont pas autre chose que 'i' et 'u'); mais quand on demande en vertu de quoi se produit la double fonction, ou le double effet acoustique (car le mot 'fonction' ne veut pas dire autre chose), on répond; tel son a telle fonction selon qu'il reçoit ou non l'accent syllabique'.^{*}

Another scholar to adopt double terminology is Pike,⁺ who uses the following terms :

Phonological Terms.

Phonetic Terms.

Vowels

Vocoids.

Consonants.

Non-vocoids.

^{*}

De Saussure, Cours de Linguistique Générale - pp.87-8-9.

⁺

Kenneth L.Pike, Phonemics, pp.13-60.

He states: 'A vocoid is a sound which has air escaping (1) from the mouth (2) over the centre of the tongue (that is, not lateral), (3) without friction in the mouth (but friction elsewhere does not prevent the sound from being a vocoid'.

'Now non-vocoids sounds will be considered. These include any sound in which the air stream escapes from the nose but not the mouth; sound in which the air escapes from the mouth but over the side of the tongue; sounds in which the air escapes from the mouth but with friction localized at one point in the mouth; and sounds during which the air stream has no escape.'

He later continues : 'Each language contains its characteristic types of sequences of sounds. Some languages have heavy consonant clusters, that is, sequences of several continuous consonants. Other languages tend to have no consonant clusters but rather alternate consonants and vowels. In some of these languages the investigator may, at first, be in doubt whether to write certain sequences (eg. non-syllabic i and u as consonants (i.e. 'y' and 'w') or as vowels. He should interpret those sigments as consonants or as vowels according to the way in which they occur in sequences in places parallel to the occurrence of items which are certainly consonants,(such as t and s or vowels 'such as syllabic a ').

of
Lastly: 'When a sound is/a type which appears suspicious, since it might be either consonant or vowel, the investigator makes his decision on the basis of its distribution in phonetic or phonemic syllables, or morphemes, or its distribution in relation to analogous non-suspicious items.'

It is necessary to separate the two levels of treatment, as it is equally necessary to define phonological consonants and vowels at the beginning, and then, at a phonetic level, what is to be found as a realization of a phonological consonantal unit should be classified as phonetic consonantal sound and the realizations of phonological vowel units should be treated as phonetic vowel sounds, without indulging in physiological or physical terminology or phraseology to define linguistic objects even if these are phonetic sounds.

In defining the phonological unit, great care must be taken to keep in view two important considerations :

- 1 - linguistic patterning, or, as Pike prefers to term it: 'distribution', and
- 2 - function.

With these two points in mind, consonants and vowels are best defined in the light of the particular language or dialect in which they occur and to which they belong. In A.D. a consonant is capable of being one of the radicals

in the word. Such is not the case with a vowel.

The term radicals implies the components of the unaffixed word which correlate this word to a paradigm. In such paradigm, vowels are not permanent or recurrent as radicals are. With this definition at hand, we can proceed to establish and investigate the consonant and vowels units in the dialect.

The A.D. consonantal units defined.

'Si deux sons de la même langue apparaissent exactement dans le même entourage phonique, et s'ils peuvent être substitués l'un à l'autre sans qu'il se produise par là une différence dans la signification intellectuelle du mot, alors ces deux sons ne sont que des variantes facultatives d'un phonème unique.'¹

These two sounds above described necessarily belong to two different phonological units. Commutation in a system^{is} a criterion used here for defining units, built^{and is} on the axiom that variants of the same unit are mutually exclusive, while the units themselves are commutable in the system through a paradigm or opposed examples. Examples chosen for this purpose must be comparable, such as are 'raah' and 'faah'. The employment of these two examples shows that 'r' the initial of 'raah' belongs to a different phonological unit than^{that} to which 'f', the initial of 'faah' belongs. A similar choice of examples covering all units of the system will suffice to establish the differences between every unit and all others, and is as follows :-

1. N.S. Tröbetzkoy, ^uPrincipes de Phonologie, p.47.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
ʃ ʃ aal	'family of'	b baal	attention.
ʃ ʃ aacul	I eat	t taacul	you eat.
ʃ ʃ ahl	relatives	ʃ ʃ ahl	ignorance.
ʃ ʃ aal	'family of'	h haal	conditions (states)
ʃ ''	''	x xaal	uncle.
ʃ ''	''	d daal	one of the letters.
ʃ ʃ ajj	whatever	r	
ʃ ʃ ahl	relatives	z zajj	as, similar to
ʃ ʃ ann	He mourned	s sahl	easy
ʃ ʃ aan	The time has come	ʃ ʃ ann	He directed - started (ʃ ann el aara).
ʃ ʃ aan	he mourned	ʃ ʃ aan	He kept
ʃ saʃal	he asked	q qann	he refused to give.
ʃ ʃ itʃallam	he suffers	ʃ saʃal	he plied (another) with drinks to the point of making him drunk.
ʃ ʃ адаа	harm	ʃ ʃ itʃallam	he learns.
ʃ ʃ аsɪ	origin	ʃ ʃ адаа	dinner.
ʃ ʃ aadat	she harmed	ʃ ʃ аsɪ	section, part.
ʃ ''	''	q qaadat	she led, burnt
		c caadat	she plotted against

Unit.	Example.	Meaning.	Unit.	Example.	Meaning.
q	q aadat	she harmed	l	laadat	she took refuge.
q	q ajj	whatever	m	majj	water.
q	q aal	family of	n	naal	he obtained.
q	q abaa	he declined to	h	habaa	he bestowed.
q	q atar	trace	w	watar	cord.
q	majsuur	imprisoned	j	majsuur	easily obtained.
b	ball	he drenched	t	tall	a hill
b	"	" "	J	Jall	may he remain great (Jall Jalaalu).
b	"	" "	h	hall	he settled.
b	"	" "	x	xall	he broke the law (xall binnidaam).
b	"	" "	d	dall	he guided.
b	baas	he kissed (or harm)	r	raas	head.
b	baal	he urinated	z	zaal	it vanished.
b	ball	he drenched	s	sall	he pulled out.
b	"	" "	f	fall	he took.

Unit.Example.	Meaning	Unit.Example.	Meaning
b baan	he appeared	p saan	he kept.
b baaʒ	he sold	q qaaʒ	it was lost
b ''	''	t ʔaaʒ	he obeyed.
b baabu	his door	ʔ baaʒu	the length of his spread arms.
b balaa	catastrophe.	ʔ ʔalaa	high cost of living.
b baaqat	it laid an egg	f faaqat	it overflowed.
b ʔtbarraʒ	he gave voluntary contribution.	q ʔtqarraʒ	he has had his break-fast.
b baan	he appeared.	c caan	he was.
b baan	''	l laan	he was flexible.
b baat	he passed the night	m maat	he died.
b baah	he dis-closed	n naah	he wept.
b baan	he appeared	h haan	he was belittled.
b balad	a town	w walad	a boy.
b xabbar	he told	j xajjar	he offered the option.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
t taab	he repent- ed	ṭ ṭaab	he brought
t tall	a hill	ḥ ḥall	a solution
t ''	''	x xall	vinegar
t taab	he re- pented	d daab	he melted.
t fataḥ	he opened	r farah	he rejoiced
t faat	he passed	z faaz	he won.
t tamm	it became complete	s samm	he poisoned.
t taab	he re- pented	ṣ ṣaab	he became grey.
t ''	''	ṣ ṣaab	he hit(the target).
t baatat	she passed the night.	q baaqat	it laid an egg.
t tabaḥ	he followed	ṭ ṭabaḥ	he printed.
t taar	vendetta	ḥ ḥaar	shame
t taar	''	ṭ ṭaar	a cave
t taar	''	f faar	a mouse.
t faat	it passed	q faaq	it excelled.
t beet	a house	c beec	back(football)
t tuff	spit! (imp- erative).	l luff	wrap (imp.)
t xattam	he cut to pieces	m xamman	he guessed.

Unit.Example.	Meaning	Unit.Example.	Meaning.
t taab	he repented	n naab	he deputized for.
t taab	'''	h haab	he filled with awe.
t fattah	he opened his eyes	w fawwah	it was smelly.
t ʕatmaan	prices	j ajmaan	oaths.
ʃ ʃalaal	a proper name (or glory)	h halaal	permissible.
ʃ ʃaliil	glorious	x xaliil	a proper name (or a friend.
ʃ ʃaab	he brought	d daab	it melted
ʃ ʃahiim	Hell	r rahiim	merciful.
ʃ ʃamiil	beautiful	z zamiil	a colleague (mate)
ʃ ʕaʃal	speed	s ʕasal	honey (trickles)
ʃ ʃaab	he brought	ʃ ʃaab	he became grey.
ʃ ''	''	ʃ paab	he hit (target)
ʃ ʕaʃal	speed	q ʕaʒal	muscles
ʃ ʃaab	he brought	ʃ ʃaab	it became good
ʃ ''	''	ʕ ʕaab	he was aggressive.
ʃ ''	''	ʔ ʔaab	he was absent
ʃ ʃaar	neighbour	f faar	a mouse

Unit.Example.	Meaning.	Unit.Example.	Meaning.
ʃ faar	neighbour	f faar	a mouse.
ʃ famaʕ	he collected	q qamaʕ	he checked.
ʃ famaal	a proper name	c camaal	a proper name
ʃ famaʕ	he collected	l lamaʕ	it flashed
ʃ farr	he dragged	m marr	he passed
ʃ faar	neighbour	n naar	fire
ʃ faab	he brought	h haab	he filled with awe.
ʃ falad	patience	w walad	a boy.
ʃ rajjah	he considered something to be more likely	j rajjah	he comforted.
h hatam	it became invisible	x xatam	he sealed, terminated.
h hall	he undid	d dall	he guided
h wahhad	he confessed monotheism	r warrad	he became rose, or he imported
h faah	he smelled	z faaz	he succeeded
h haar	he wondered	s saar	he walked
h hatam	it became inevitable	ʃ ʃatam	he called bad names.
h haafii	barefoot	p ʔaafii	pure.
h hall	he undid	q qall	he lost his way.
h "	"	t ʔall	he peeped.
h haal	condition (state).	ʕ ʕaal	good.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
h halab	he milked	ʔ ʔalab	he overcame
h haadat	she menstruated	f faadat	it over- flowed.
h ''	''	q qaadat	she sued.
h hammal	he loaded	c cammal	he completed
h naah	he cried	l naal	he obtained
h ''	''	m naam	he slept
h haal	condition (state)	n naal	he obtained
h habaa	he crawled	h habaa	he bestowed
h hafa	barefooted- ness	w wafaa	gratitude, faithfulness
h sahhab	he provided bad women	j sajjab	he let go.
x xaab	he failed	d daab	it melted.
x xass	he allocated	r rass	he arranged.
x xaff	it became lighter(in weight).	z zaff	he attended a ceremonial wedding.
x xaab	he failed	s saab	he let go.
x ''	''	ʃ ʃaab	he became grey.
x ''	''	ʂ ʂaab	he hit(target).
x xall	he broke the law (xall binnidaam)	q qall	he lost his way.
x xaab	he failed	t taab	it became good.

Unit.Example.			Meaning.	Unit.Example.			Meaning.
x	xaab		he failed	ʒ	ʒaab		he was aggressive.
x	''		''	ʔ	ʔaab		he was absent
x	xann		one who talks with a nasal accent	f	fann		art.
x	xaliil		a friend	q	qaliil		little.
x	xeel		horses	c	ceel		measurement of amount (of seeds).
x	''		''	l	leel		night.
x	''		''	m	meel		bias
x	xaab		he failed	n	naab		he deputized
x	xaan		he betrayed the trust	h	haab		he filled with awe.
x	xallaf		he left.	w	wallaf		he composed
x	ʕaxtaam		seals	j	ʕajtaam		orphans.
d	daaq		he tasted	r	raaq		he became quieter.
d	daar		he turned (also home)	z	zaar		he visited
d	''		''	s	saar		he walked
d	''		''	ʃ	ʃaar		he advised
d	''		''	ʂ	ʂaar		he became
d	dall		he guided	q	qall		he lost his way.
d	''		''	t	tall		he leaned out (or peeped).

Unit.Example.	Meaning.	Unit.Example.	Meaning.
d daar	he turned (also(home))	ʔ ʔaar	shame.
d ''	''	ʔ ʔaar	a cave, or he dis - appeared.
d ''	''	f faar	a mouse, or it boiled.
d daam	it was permanent	q qaam	he stood up
d dawwan	he wrote down	c cawwan	he composed or created.
d ''	''	l lawwan	he coloured
d ''	''	m mawwan	he provided
d ''	''	n nawwan	he pronoun- ced the (tanwiim).
d ''	''	h hawwan	he minimized
d ʔadraa	warmer	w ʔawfaa	more faith- ful.
d muxaddar	doped	j muxajjar	he has the option.
r raḥam	he pitied	z zaḥam	he jammed
r rubʔ	a quarter	s subʔ	one seventh
r jirfaʔ	he lifts	ʃ jiffaʔ	he pleads or someone's behalf.
r ''	''	ʃ jiffaʔ	he smacks.
r raaq	he became quieter	q daaq	it became tighter.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
r harram	he prohibited	t hattam	he destroyed.
r razaq	he provided	z azaq	he weeded (the field)
r bart	apart	y bayt	suddenness.
r raqa	he patched	f faqa	he damaged (an eye)
r raps	he arranged	q qaps	he cut with scissors.
r haram	he deprived	c hacam	he gave a verdict.
r raham	he pitied	l laham	he connected
r raqaa	he pleased	m maqaa	he passed.
r raas	a head	n naas	people.
r faar	neighbour	h faah	influence.
r farra _z	he caused to drink	w fawwa _z	he starved
r saariq	a thief	j saajiq	driving.
z zaar	he visited	s saar	he walked
z zar _z	plantations	f far _z	religious law.
z zaad	he insulted	s saad	he captured
z zall	he slipped	q qall	he lost his way.
z "	"	t fall	he leaned on or (peeped)
z zaam	a turn	z zaam	a year
z zarr	he squeezed	y yarr	he cheated

Unit.Example.			Meaning.	Unit.Example.			Meaning.
z	zarr		he squeezed	f	farr		he escaped
z	"		"	q	qarr		he settled or he confessed.
z	"		"	c	carr		he attacked.
z	bazz		a cloth	l	ball		he drenched.
z	zaal		he vanished	m	maal		he leaned.
z	"		"	n	naal		he obtained.
z	jitzawwar		he falsifies	h	jithawwar		he bullies
z	ع azzar		he punished	w	ع awwar		he caused injuries.
z	"		"	j	ع ajjar		he shamed another.
s	samm		he poisoned	ʃ	ʃamm		he smelt something.
s	"		"	ʂ	ʂamm		he tightened
s	"		"	q̣	q̣amm		he higgd or added
s	saab		he let go	ṭ	ṭaab		he was good.
s	samm		he poisoned	ʕ	ʕamm		he drank
s	saar		he walked	ʔ	ʔaar		he became jealous or he disappeared.
s	saaq		he drove	f	faaq		he excelled.
s	saal		it flowed	q	qaal		he said.
s	seef		a sword	c	ceef		how, enjoy- ment.
s	jisqii		he waters	l	jilqii		he casts.
s	saal		it flowed	m	maal		he leaned

Unit.Example.			Unit.Example.		
Meaning.			Meaning.		
s	saal	it flowed	n	naal	he obtained
s	nasab	he related	h	nahab	he took by force.
s	ʕassar	he made difficult	w	ʕawwar	he inflicted injuries
s	''	''	j	ʕajjar	he shamed another.
ʃ	ʃamm	he smelt	ʂ	ʂamm	he tightened
ʃ	''	''	q	qamm	he hugged or added.
ʃ	ʃaaf	he saw	t	tʌaf	he made a tour.
ʃ	ʃamm	he smelt	ʕ	ʕamm	he drank.
ʃ	ʃaab	he became grey	ʔ	ʔaab	he was absent
ʃ	ʃarq	east	f	farq	difference
ʃ	ʃall	he took	q	qall	it became less
ʃ	ʃaan	he became ugly (also sake)	c	caan	he was
ʃ	ʃahm	fat(white meat)	l	lahm	meat
ʃ	ʃall	he took	m	mall	he became fatigued.
ʃ	ʃaab	he became grey	n	naab	he deputized
ʃ	qʌfar	he skinned	h	qahar	he conquered
ʃ	haʃaa	he stuffed	w	hawaa	it contained
ʃ	ʕaʃʃar	he collected levies	j	ʕajjar	he shamed another.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
ṣ sarf	discharging	q qarf	charm.
ṣ ''	''	ṭ tarf	edge.
ṣ saan	he kept	ḥ aan	he helped
ṣ saar	he became	ṭ saar	he dis - appeared.
ṣ sawwar	he photo- graphed or pointed.	f fawwar	he boiled.
ṣ saam	he fasted	q qaam	he stood up
ṣ seef	summer	c ceef	enjoyment.
ṣ suum	fast! (im- perative).	l luum	blame (imperative)
ṣ saalih	good, pious, suitable.	m maalih	salted
ṣ saam	he fasted	n naam	he laid down
ṣ nassar	he converted to Christianity	* nawwar	he lit (the lamp)
ṣ saam	he fasted	h haam	he wondered.
ṣ ṣabṣaar	eyes	j ṣabjaar	wells.
q dafar	victory	ṭ tafar	poverty
q baadat	it laid an egg.	ḥ baadat	she sold.
q dafar	he won over	ṭ tafar	he forgave
q qunuum	doubts	f funuum	arts.
q qall	he lost his way	q qall	it became less.
q deef	a guest	c ceef	enjoyment.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
q qamm	he hugged or added	l lamm	he collected
q qall	he lost his way	m mall	he became fatigued
q qahr	back	n nahr	river
q qall	he lost his way	h hall	it appeared (the moon)
q maqfuur	woven	w mawfuur	abundant
q maqmuun	guaranteed	j majmuun	blessed.
t tallaq	he divorced	ʔ ʔallaq	he hanged.
t "	"	ʔ ʔallaq	he closed down
t "	"	f fallaq	he split
t ʔarf	end, edge.	q qarʔ	disgust.
t maʔarat	it rained	c macarat	she showed cunning.
t ʔaah	it fell down	l laah	he appeared
t ʔaahir	pure	m maahir	clever.
t ʔawaa	he rolled	n nawaa	he made up his mind
t "	"	h hawaa	he fell down
t ʔaʔʔal	he delayed	w ʔawwal	he relied upon.
t xaʔʔat	he drew lines	j xajjaʔ	he sewed (a garment).

Unit.	Example.	Meaning.	Unit.	Example.	Meaning.
ʕ	ʕajjab	he declared to be aggressive	ʔ	ʔajjab	he remained absent.
ʕ	ʕaal	good	f	faal	omen.
ʕ	ʕuud	go back(imp.)	q	quud	lead(imp.)
ʕ	ʕaan	he helped	c	caan	he was.
ʕ	ʕadiida	numerous	l	ladiida	delicious
ʕ	ʕadd	he counted	m	madd	he stretched
ʕ	ʕaar	shame	n	naar	fire
ʕ	-qaʕad	he sat down	h	qahad	he was sleepy
ʕ	ʕizza	might	w	wizza	goose
ʕ	ʕaabis	cynical	j	jaabis	dry.
ʔ	ʔaar	he disappeared	f	faar	it boiled
ʔ	ʔalab	he overcame	q	qalab	he turned over.
ʔ	baʔla	a she-mule	c	bacla	buckle
ʔ	baʔaa	he wanted	l	balaa	he inflicted a catas - trophy.
ʔ	ʔaalii	dear	m	maalii	filling up
ʔ	ʔadar	he was treacherous	n	nadar	he nominated a religious donation.
ʔ	''	''	h	hadar	he talked much.
ʔ	ʔitʔassal	he has a bath	w	ʔitwassal	he pleads
ʔ	paʔar	he minimised	j	paʔjar	he rendered.

Unit.Example.	Meaning.	Unit.Example.	Meaning.
f farr	he escaped	q qarr	he confessed or settled.
f ''	''	c carr	he attacked.
f faah	he smelt	l laah	he appeared
f farr	he escaped	m marr	he passed
f faar	a mouse	n naar	fire.
f jifal	he fears	h jighal	he is unaware
f ʕaffar	he smothered	w ʕawwar	he inflicted an injury.
f ''	''	j ʕajjar	he shamed.
q qalb	heart	c calb	dog
q qaam	he stood up	l laam	he blamed
q qaal	he said	m maal	he leaned.
q ''	''	n naal	he obtained
q naʕaf	he adorned	h nahaf	he smacked
q naqqa ʕ	he soaked	w nawwa ʕ	he combined different kinds.
q ʕiqaal	head-dress	j ʕijaal	children.
c cabas	he stuffed	l labas	he wore
c daccar	he reminded	m dammar	he destroyed
c cafaa	it sufficed	h hafa	he made a mistake.
c ''	''	h hafa	he exiled.
c ''	''	w wafaa	he fulfilled
c ʕaccar	he stirred	j ʕajjar	he shamed.

Unit.	Example.	Meaning.	Unit.	Example.	Meaning.
l	qaal	he said	m	qaam	he s tood up
l	laqqaṭ	he picked up	n	naqqaṭ	it dropped
l	lamas	he touched	h	hamas	he whispered
l	laasiṭ	stinging	w	waasiṭ	spacious
l	labas	he dressed	j	jabas	it dried up
m	macat	he stayed	n	nacat	he sticked
m	maat	he died	h	haat	give! (imp.)
m	ṣammar	he repaired	w	ṣawwar	he inflicted an injury
m	''	''	j	ṣajjar	he shamed.
n	naam	he lay down	h	haam	he wondered
n	naafaq	he behaved as a hypocrite	w	waafaq	he agreed
n	naafiṭ	useful	j	jaafiṭ	a place name.
h	haram	old age	w	waram	swelling up
h	sahhal	he made easy	j	sajjal	he made to flow.
w	ṣawwar	he inflicted an injury	j	ṣajjar	he shamed.

There are, then, twenty-five consonantal units in the A.D. consonantal system; as seen in the above tables, these consonants are transcribed as follows :-

ʔ - b - t - ʃ - h - x - d - r - z - s -
 ʃ - ʃ - ʔ - t - ʕ - ɣ - f - q - c - l -
 m - n - h - w - j.

This phonological transcription has been adopted in this work for our purpose. Although this dialect is not written, a form of ^{writing} dialect is in practice among the uneducated literates of Aden, and this adopts classical Arabic characters for its purpose. Most of the records of this thesis were written down, before being recorded, and then read to the microphone. The small number of records that was not written beforehand represent spontaneous examples. The writing, of course, was in that form of character adopted from the C.A. alphabet. The writing of A.D. is practically confined to the following types of activity :-

- 1- personal correspondence.
- 2- book-keeping (for personal more than official reference)
- 3- advertisements and notices.




The modification that the C.A. alphabet received before being employed in writing A.D. can be summed up as follows:

- 1- rejection of the symbol of a unit not found in A.D.; this unit is symbolized ڤ in classical Arabic writing.






1. The official language of Aden is English.

2- some unit-names are modified, such as :

C.A. baaʿ : A.D. bee

3- some application of symbols are different from what they are in Classical Arabic, eg.  (C.A.  - A.D. ) is applied to a palatal affricate in Classical Arabic but to a palatal plosive in Aden Dialect.

4- shapes of symbols are unchanged, and appear to be, so to speak, prosodical, i.e. the shape of any symbol depends on its position in the written word as well as on the preceding and the following symbols.

In the following table which illustrates this aspect of the symbols, the forms , , ,  and  are not to be connected with a following consonant; they are, however, connected with a preceding one, in writing. The script on this table is presented in the form of Arabic writing called 'nasx' which allows clear cut delimitations of consonantal symbols in different positions as follows :

Name, Isolated.	Initial.	Medial.	Final.	Phonological symbol.	Remarks.
ʿalif	ا	ا	ا	aa, ʿ	
bee	ب	ب	ب	b	name modified.
tee	ت	ت	ت	t	" "
ʿiim	ج	ج	ج	ʿ	Not "
haa	ح	ح	ح	h	" "
xaa	خ	خ	خ	x	" "
daal	د	د	د	d	Not "
raa	ر	ر	ر	r	" "
zeen	ز	ز	ز	z	" "
siin	س	س	س	s	Not "
ʿiin	ش	ش	ش	ʿ	" "
saad	ص	ص	ص	s	" "
qaad	ض	ض	ض	q	" "
taa	ط	ط	ط	t	" "
ʿeen	ع	ع	ع	ʿ	" "
ʿeen	غ	غ	غ	ʿ	" "
fee	ف	ف	ف	f	" "
qaaf	ق	ق	ق	q	Not "
caaf	ك	ك	ك	c	" "
laam	ل	ل	ل	l	" "
miim	م	م	م	m	" "
nuun	ن	ن	ن	n	" "
hee	ه, ه	ه	ه	h	" "
waaw	و	و	و	w	Not "
jee	ي	ي	ي	j	" "

CLASSIFICATION OF CONSONANTS.

In classifying, one cannot base the classification of phonological consonants on physiological or physical grounds; as has already been stated in discussing the differentiation between vowels and consonants, the phonological vowels and consonants are unpronounceable. To classify these units according to what is here termed articulations does imply a physiological or physical reference; the use of this term in the phonological context denotes types rather than actions, systematic concepts rather than physical objects, and devices rather than processes. When, for example, bilabial articulation is discussed under this heading, the object of discussion is a 'type of articulation' that is common to all 'b', 'm' and 'w' and not the specific process of articulating one or the other of these. Labial articulation is a type that includes 'f' as well; 'b', 'm', 'w' and 'f' here are phonological, not phonetic consonants.

The term correlation, however, does not cause such ambiguity despite its dealing with the attributes of the sounds which are, in the large part, acoustic. The object here is the systematization of these attributes, not their acoustic description as in phonetics. The use of the term correlation here denotes, then, an attribute, positive in one and negative in the other unit, of a pair described as

having the same type of articulation. This sense differs from Trubetzkoy's use which means '' L'ensemble de toutes les paires corrélatives qui sont caractérisées par la même marque de corrélation.'' ¹ In the connotation of this work the term will, accordingly, include manners of articulations (such as plosion, friction, etc.,) as well as the term 'emphatic', which denotes an attribute that, in a phonetic handling, would mean a complex organic process at the back of the tongue and the pharynx ² (cf. X-Ray pictures of the postures of q, ʃ, ʒ, d, t, s.)

The table on the following page illustrates the relations between articulations and correlations.

1. Principes de Phonologie, p.89.

2 . See p. 265

There are also prosodies or inclinations to be dealt with under this heading, such as W.N.Y., glottalization, aspiration, etc. These cannot be treated at the same level as correlations, since they are attributes of positions rather than of phonological units in the consonantal system.

Under the heading of W.N.Y., the above units are put into seven groups as follows :

W.	{	Group 1	-	q, - t - p .
		" 2	-	x - γ - q .
N.	{	" 3	-	b - m - w - f .
		" 4	-	ç - h - ɣ - h
		" 5	-	r - l - n .
Y.	{	" 6	-	d - t - z - s.
		" 7	-	ʃ - c - j - ʒ

In this grouping, it should be noted that the term 'W' includes 'emphatic' and 'back' (i.e. q - t - p and x - γ - q). The term 'Y', opposed to 'W', covers group 6, articulatorily related to group 1; and group 7, which is similarly related to group 2. The term 'N' (initial of neutral) refers to the three groups (3, 4 and 5) that are neither 'W' nor 'Y'. In other words, the implication of 'N' is negative in a sense.

1. By this term is meant the extra-correlational attribute of a unit inclined towards a different type of articulation beside its own, such as palatization, nazalization, glottalization, etc.

'W.N.Y!' as it stands here is not only a systematization of the phonetic feature of resonance (see pp.252-55) but can also be contrasted to the 'phoneme theory' which recognises phonological units, more or less, as isolated concepts in a 'systematic framework'. In the system established here, every group is, so to speak, a phoneme, a class in itself, articulatorily as well as prosodically related, while the phonological units are divergences within the group. The so-called phonemic classification should recognise seven 'obstruents'¹ as opposed to 'sonant' which can be described as follows :

- | | | |
|-----|----------------|-----------------|
| 1 - | Back dental, | (i.e. Group 1.) |
| 2 - | Back palatal, | (i.e. Group 2.) |
| 3 - | Labial, | (i.e. Group 3.) |
| 4 - | Infra-buccal, | (i.e. Group 4.) |
| 5 - | Alveolar, | (i.e. Group 5.) |
| 6 - | Front dental, | (i.e. Group 6.) |
| 7 - | Front palatal, | (i.e. Group 7.) |

These seven have no transcription of their own, but has it not been claimed that this is different from the phoneme theory ? In relation to a possible symbolization of these, the phonological transcription of this work will show a measure of narrowness.

1. A term introduced by Prof.Firth.

It is curious that the phoneme theory has seen the light in the same intellectual climate in which the Gestalt psychology of shapes was in the air; more so because the phoneme theory has had a psychological version. Even in its non-psychological form, it has been largely concerned with orthography which is a favourite example with Gestalt psychologists.

Glottalization is also a positional feature in the consonants *t*, *ʔ*, and 'r' and has been dealt with later (p. 189).

The feature of aspiration is also discussed under a special heading, but here only aspiration in the consonants concerns us. Of these, the voiceless plosive are aspirated. The position in which this feature occurs is found under the heading of 'prosody of aspiration'.

The following pairs are correlatives in the system; the correlation of each pair is given :-

d - t	voice and voicelessness
z - s	voice and voicelessness
ʃ - s	emphasis and absence of emphasis
ʒ - c	voice and voicelessness
ʒ - x	voice and voicelessness
ʒ - h	voice and voicelessness
b - m	plosion - nasality
l - n	laterality and nasality
ɣ - h	plosion - friction.

There are no correlations between

q - d

t - t

d - z

t - s

c - f

The latter pairs are articulatorily different from the point of difference in type of articulation as in q - d and d - z and t - s and c - f or in inclination as t - t. The q is dental and d is denti-alveolar in d and t the tip of the tongue is raised, but in z and s it is down ~~as is the difference between c and f~~; t is both emphatic and glottalized whilst 't' is neither.

DISTRIBUTION OF COMPATIBLE UNITS.

Not every consonant can occur in any syllable. For a consonant to occur in a given syllable the neighbouring consonant is a factor, among others, (such as the form of the syllable and affixation) to be taken in consideration. The two consonants dealt with here are radicals of the word, for since affixes of fixed forms are affixed regardless of the neighbouring consonant, no distributional criterion will be of any practical value. The tables accompanying this show that the two consonants studied are :

TABLE 1 : the 'C' of 'VC' and the initial of the following syllable.

TABLE 2 : the 'C' of 'CV' and the initial of the following syllable.

TABLE 3 : the initial and final of CVC.

TABLE 4 : the initial of 'CVV' and that of the following syllable.

TABLE 5 : the initial and final of CVVC.

TABLE 6 : the initial and the penultimate of CVCC.

TABLE 7 : the penultimate and the ultimate of CVCC.

These tables are, in themselves, positive statements of the distribution of compatibles within the above described limits. In addition to that, however, the bases of incompatibility of the two consonants of the above

description can be given as follows :

The general tendency at work is that a consonant of Group I (p, q, t) is incompatible with another of the same group or of Group VI (t - d - s - z) on grounds of articulatory affinity; consonants of both groups can be described as dentals. A consonant of Group II is incompatible, in the same way and for the same reason, with another of the same group (x - γ - q) or of Group VII (ʃ - c - ʒ - j). All consonants in these two groups can be described as palatals.

A consonant from Group III, IV, or V is incompatible with another of the same group. The two terms 'dentals' and 'palatals' are used with an extension in their application; the first, as can be seen, covers dental and denti-alveolar articulations and the second 'palatals' and 'velars', i.e. whether the articulation is in the hard or in the soft palate. The articulation of Group III is labial, that of IV is infra-buccal and of V is alveolar.

$t = \text{Compatibles}$

⑤

Preceding consonant

The preceding consonant is the initial and the following is the final of etc.
The word studied is unaffixed.
+ = compatible.

[illegible]

The preceding consonant is the initial of CVV, and the following is the initial consonant of a following syllable. The word studied is unaffixed.

[illegible]

THE VOWEL UNITS DEFINED .

The vowel units can be defined in a manner similar to that applied to the consonantal units, i.e. through commutation in the system. The main thing is that, as in the case of consonants, examples chosen must be comparable. Long vowels are comparable to long vowels within the context, and ^{the} short to the short. The following examples may illustrate the method defining short vowels :

malic	=	king	:	malac	=	angel
milc	=	possession	;	mulc	=	monarchy
ʃasmar	=	dark	:	ʃasmur	=	I chat.

Three short units are now differentiated, one is symbolized 'i', another 'a' and the third 'u'.

The long vowels can similarly be differentiated as follows :

biiʒ	=	sell! (imperative)	:	beeʒ	=	sale (selling).
biiʒ	=	''	:	baaʒ	=	he sold.
riih	=	wind	:	raah	=	he went.
riih	=	''	:	rooh	=	soul.
riih	=	''	:	ruuh	=	go! (imperative).

beeʒ	=	sale	:	baaʒ	=	he sold.
heel	=	endurance	:	hool	=	a year.
seer	=	walking	:	suur	=	wall.

considered typical, not expressing any phonetic value, but expressing a group of values closely associated in the system. For the purpose of this work, each unit is given a name which is either similar to, or adapted from, one found in the C.A. system. The names employed are : 'casra:' (Sh. 'i', Long. 'ii') given to a unit covering a number of front close ^{vowels} both short and long. It is used in the same sense as in C.A., the source from which it is taken.

'xafqa': (Long 'ee' only) given to a unit composed of a number of long front vowels between half-open and half-close. In C.A. only the past participle 'maxfuuq' is used to describe words ending in 'casra'.¹

'fatha': (Sh. 'a', Long. 'aa') denotes a unit including a number of back and front open vowels both short and long, used in the same sense as in C.A., the original source of this name.

'rafʿa': (only long 'oo'). As in 'xafqa', this name is taken from the form 'marfuuʿ' used in C.A. to denote a word ending in 'damma'. It is used here for a unit covering a number of long back vowels between half-open and half-close.

1. In C.A. vowel system there are no vowels between half-open and half-close whether back or front. The 'xafqa' and 'rafʿa' of A.D. are the counterparts of C.A. 'aj' and 'aw' respectively.

'damma': (Sh. 'u', Long 'uu') denotes a unit of a number of back close vowels both long and short as in C.A., its original source.

In the writing of the dialect, short vowels are seldom written; but when they are, they appear as diacritical marks over or below the consonants as in C.A. Two long vowels ('xafa' and 'rafa') have no special symbols in writing. The 'xafa') is transcribed the same as long 'casra' and the 'rafa' as long 'damma'. The symbols for long vowels are written the same as those of some consonants. The following illustrates the shapes of the symbols of the vowels transcribed in A.D.

<u>U n i t</u>	<u>Phonological Symbol. Shape of writing.</u>		
'casra'	Long	ii	— 5 —
	Short	i	— / —
'xafa'	Long	ee	— 5 —
'fatha'	Long	aa	— l —
	Short	a	— / —
'rafa'	Long.	oo	— 9 —
'damma'	Long.	uu	— 9 —
	Short.	u	— / —

There is also a symbol for zero-vowel, or 'sucuun'

No diphthongs are found in A.D. system; what is found is a sequence of ('fatha') + a semi-vowel). While a diphthong is one systematic unit, the sequence above is made up of two units, and there is no justification for

considering the two units as one. Furthermore, this type of sequence is restricted in occurrence to the morphological type 5 as in 'majmuun' and 'mawluud' and when the semi-vowel is doubled as in 'ʔajjar' and 'sawwar'.

There is a central vowel which is found outside the system and is transcribed ' ə '. This is the vowel of 'VC' syllable initial in the word, and is found in the following :

- (1) the definite article əl walad.
- (2) prefixed in verbal forms, ɐhtaram, ɐhtiraam.
- (2) is also the transcription of the anaptyctic vowel found between :
- (1) the penultimate and the
ultimate of CVCC, eg. ʔaqəl (phonetic
transcription).
- (2) between the ultimate of
a closed syllable and the
initial of a following
syllable, eg. jibəni: (phonetic
transcription)
fɛ: tən p h,

In narrow transcription, the 'VC' vowel must be differentiated from the anaptyctic by some device or the other, eg. ¹● and ²●.

In phonetic transcription also these two will be differentiated; the 'VC' vowel symbol (e) will be

1. The grouping of the vowels variants here is connected with the phonetic consonantal groups according to resonance, not with the phonological prosodic groups (see p. 25-2)

placed on the same level with other symbols, but the anaptyctic vowel symbol (ə) will be raised higher on the line and above the level of the associated symbols. In phonological transcription, such need does not arise, since anaptyxis is symbolized in phonetic transcription only.

It has been stated that every unit is a sum of phonetic values; the table on the following page shows the symbols of values for every unit. The description of the various values is to be found in the phonetic section.

(The variants are grouped according to type of resonance).

(1).

Unit.	Grp.1	Grp.2	Grp.3	Grp.4	Grp.5	Grp.6	Grp.7
(casra) Sh.	i	ɪ	ĩ	ɿ	ɪ	ɪ	ɪ
Long.	i:	ɪ:	ĩ:	ɿ:	ɪ:	ɪ:	ɪ:
(xafda) Sh.	-	-	-	-	-	-	-
Long.	e:	e:	e:	e:	ɜ:	ɜ:	ɜ:
(fatha) Sh.	a	ʌ	ʌ	a	ʌ	æ	ɛ
Long.	a:	ʌ:	ʌ:	a:	ʌ:	æ:	ɛ:
(rafʔa) Sh.	-	-	-	-	-	-	-
Long.	ə:	ɔ:	ɔ:	ɔ:	o:	o:	ɔ:
(damma) Sh.	u	u	ü	u	ü	ʊ	ü
Long.	u:	u:	ü:	u:	ü:	ʊ:	ü:

(1) The grouping of the vowels variants here is connected with the phonetic consonantal groups according to resonance, not with the phonological prosodic groups. (see p. 252).

VOWEL SEQUENCES .

It has been stated that the central extra-systemic vowel (ə) occurs as the vowel of 'VC' syllable initial in the word. This is also the symbol for anaptyxis found between the two consonants in succession; these consonantal successions are defined under the appropriate heading of anaptyxis (p. 170). The CV, 'CVC' and 'CVCC' syllables have three vowel possibilities, all with the prosody of shortness. These three possibilities are 'i', 'a' and 'u'. The two syllables 'CVV' and 'CVVC' have five possibilities, all with the prosody of length. These are 'ii', 'ee', 'aa', oo, 'uu', eg.

citaab - catab - cutub - ħilm - ħabd - ħumr
 caatib - maafii - beetac - joomeen - suura -
 biir - beet - baab - boos - buuc - el biir, etc.

Here the purpose is to state the possible sequences of these units resulting from the succession of these six syllables. The forms studied for this purpose are disyllabic, some of which are words with, and other words without, affixation, as follows :

a) Words with affixation :

In these disyllabic forms :

1 - When the initial syllable is 'VC', the second syllable can either be medium or long (but not short) with any vowel; so the following sequences are possible :

- | | | | | | | |
|----|--------|-------|---|---------|---|---------|
| 1- | e + i | eysil | - | ecsir | - | elçilm. |
| 2- | e + a | efrah | - | erfaç | - | elfağr. |
| 3- | e + u | erqud | - | exruş | - | elçulb. |
| 4- | e + ii | ermii | - | elbiir | | |
| 5- | e + ee | | | elbeet | | |
| 6- | e + aa | erçaa | - | ehtaaf | | |
| 7- | e + oo | | | eljoom. | | |
| 8- | e + uu | ermuu | | elquut. | | |

2 - When some other syllable is initial, every vowel sequence is possible, except :

- a) Any long vowel + short 'i'
- b) Long oo as the vowel of the final syllable.
- c) The sequences (ee + uu) and (oo + uu).

Examples are given on the following page.

1 + 1	jicair	a + 1	manzil	u + 1	wufriw
1 + a	ɟilba	a + a	ɟalja	u + a	cullac
1 + u	sirru	a + u	ɟamru	u + u	cullu
1 + 11	hilwin	a + 11	tanzil	u + 11	cullil
1 + ee	ɟifleen	a + ee	calbeen	u + ee	hurreen
1 + aa	minjaar	a + aa	ɟaljaan	u + aa	muxtaar
1 + oo	X	a + oo	X	u + oo	X
1 + uu	ɟirruuh	a + uu	malɟuun	u + uu	huttuuh

... ..

11 + 1	X	ee + 1	X	aa + 1	X
11 + a	hilla	ee + a	xebea	aa + a	haaɟa
11 + u	sildu	ee + u	xeelu	aa + u	kaalu
11 + 11	sildil	ee + 11	ɟeeril	aa + 11	kaalil
11 + ee	ɟildeen	ee + ee	xeɟleen	aa + ee	xaaleen
11 + aa	ɟilraan	ee + aa	xeabaat	aa + aa	kaalaat
11 + oo	X	ee + oo	X	aa + oo	X
uu + uu	ziidu	ee + uu	X	aa + uu	ɟaabuuh

oo + 1	X	uu + 1	X
oo + a	nooba	uu + a	soora
oo + u	toobu	uu + u	suugu
oo + 11	toobil	uu + 11	suugil
oo + ee	toobeen	uu + ee	suugeen
oo + aa	ɟooɟaan	uu + aa	suuraat
oo + oo	X	uu + oo	X
oo + uu	X	uu + uu	suufuuh

b) Words without affixation :

In this disyllabic form,

1 - When the initial syllable is 'CV' or 'CVC',

a) the second syllable does not occur with 'oo',

b) this second syllable does not occur with 'u',

except when the vowel of the initial is 'u', eg.

cutub : tumbul

2 - Long 'ii' does not occur in the initial syllable;

and only occurs in the second when this former
has no 'ee' or 'oo' as a vowel.

3 - Short 'i' and 'u' do not come in sequence, i.e.

do not occur in two syllables in succession.

4 - Long 'uu' does not occur as a vowel of the
initial syllable; nor does it follow 'i',
'ee' or 'oo' when either of these is the
vowel of the initial syllable.

5 - Short 'a' and long 'aa' show the most frequent
occurrence.

6 - Long 'ee' does not occur in the second syllable,
except when preceded by 'u', eg.

huseen : qurreet .

7- The possible sequences are :

i+i	filfil	a+i	callim	u+a	succar	ee+a	zeenab
i+a	dirham	a+a	qarab	u+u	tumbul	ee+aa	seejaan
i+ii	fibriil	a+ii	jadiid	u+ii	cursii		
i+aa	sirwaal	a+aa	jabaaab	u+ee	huseen		
		a+uu	fasuur	u+aa	gudaa		
				u+uu	huduud		

aa+i	haacim	oo+a	foofal
aa+a	qaatal	oo+aa	soomaal
aa+ii	waalii		
aa+aa	saamaan		
aa+uu	faasuus		

CHAPTER VII .

The Syllables .

-- --

THE SYLLABLE IN A.D.

Notation is generally a matter of choice; as long as symbols are defined, one can either adopt, modify or choose from already used symbols, or else create new ones if this serves an immediate purpose. Syllables are statements of a systematic order, chest pulses, structural units and specific forms and quantities. A syllabic notation therefore could be carried out according to one or the other of these points of view according to the purpose of the notation and of syllabic study. Noting syllable from the first point of view, (statements of systematic order) one can use 'c' as meaning a consonant, 'v' a vowel and cv as a statement of a given systematic order in which 'c' is preceding and 'v' following. In relation to the second point of view, (chest pulses) a syllable can be represented with one symbol such as (→) or 'h' or any other symbol. A statement can accordingly be made that a word like 'catab' is made of two syllables which can be noted as (→ →). The ancient Arab Grammarians apparently built their metric units of poetic rhythm on this basis of study, i.e. looked at syllables as (chest pulses or beats or something of this nature), and described their system with the employment of the two terms 'haraca' =

movement and 'sucuun' = zero movement or pause. The former, they represented as (-) and the latter as (o) and recognized three structural possibilities, noted as follows (read from right to left) :

- 1 - 'bi' = (-)
- 2 - 'qul' - 'maa' = (o -)
- 3 - 'qaal' - 'abd' = (o o -)

In modern terms, these structures can be stated as follows :

- 1 - CV, i.e. short open.
- 2 - CVC or CVV, i.e. medium close and open
- 3 - CVVC or CVCC, i.e. long with single and double ultimate.

Certain observations can be made on this Arabic notation :

- a) The initial consonant in a syllable and the short vowel following it are both expressed in (-).
- b) Both the prosody of length and the non-initial consonant in the syllable are expressed by (o); when both are found in the syllable the (o) is repeated (see o o -).
- c) There can be no more than two (o)^s separating each (-).
- d) The prosody of length is analogous to suspension of a note; the non-initial consonant is analogous

to the space between every two successive beats,
rather than to syncopation in music.

When treated according to the third point of view
(structural unit), a syllabic notation such as the
following may be allowed :

s^1 , s^2 , s^3 , etc.

where ' S ' denotes a structural unit. The fourth and
last point of view (specific form and quantity) may
require a form of notation such as

SC, SO, MC, MO, LC and LCC,

where S = short

O = open

M = medium

C = closed with a
single ultimate.

L = long.

CC = closed with a
double final.

It is the first point of view of treating syllables
that serves as a basis for the notation adopted for this
work. With 'C' taken as meaning 'consonant' and 'V'
vowel, there are six possibilities of syllabic form in
A.D.: they are :

1 -	SC.	,	Symbolized	VC ,
2 -	SO.	,	"	CV ,
3 -	MC.	,	"	CVC ,
4 -	MO.	,	"	CVV ,
5 -	LC.	,	"	CVVC ,
6 -	LCC.	,	"	CVCC .

This type of notation is traditional and has been adopted for this thesis. There is a real necessity for the recognition of two types of syllable; one is phonological and systematic and the other phonetic and acoustic. This arises from the fact that what is systematic is not necessarily realized in the utterance. Systematic units are the outcome of systematic patterning which is the work of the linguist rather than the speaker. Some prosodic features such as elision, length, anaptyxis and the like make it impossible to assume a complete parallel between phonological and phonetic syllabification. What is systematically (CVCC) with anaptyxis is phonetically (CV + CVC) i.e. phonological CVC^VC = phonetic CV CVC, eg. (phonological trans.) ʔaql = (phonetic trans.) ʔaql. Therefore one finds it necessary to recognize, side by side, the two types of syllable as a convenient way of handling the difference between what

is 'system' and what is 'instance'. 'For particular languages the student must be prepared to find that the phonetic syllable does not correspond with the most pertinent structural grouping of segments. Just as the segments must be analyzed into the structural phonemes, so phonetic syllables must be analyzed into the structural phonemic syllables.'¹

The examples below may illustrate the difference within the continuum of the phonetic syllabification of the instance and the systematic division of the syllables abstracted from the instance in the light of the system established for the dialect. These examples are taken from a recorded dialogue spoken by my informant for two imaginary persons (LUQ.REC.1.) The difference between the 'instance' and the 'system' will be pointed out with the transcription of the examples on the following page.

1. Pike, K.L., Phonemics, p.90.

POINT OF DIFFERENCE.

PHONOLOGICAL TRANS.

PHONETIC TRANS.

<u>Instance.</u>	<u>System</u>
s	es
sa:	sa
cü	-cwa
-b	bi
li	lii
la	laa
-t	ti
b	bi

ssæ lp:müçal3:cüm.

dæçsa:çarf:ba(h)

c3:fha:lpçüha:lölçüha:l

çanp:bxe:r

xalliçalçalleçalalla(h)

lp:txabbīçalt:ha:çç(h)

essalaamuçaleeum

daçsa çarçba

ceefhaalacwçhaalelçuhaal

çana bi xeer

xalliçalçallaaçalallaa

laa tixabbīçalli haafa

a dash before a symbol denotes that it is the ultimate
of a syllable.

WORDS AND SYLLABLES.

The possible and impossible patterns .

There are some monosyllabic forms in the dialect each of which comprises a short medium or a long syllable. Most of these forms are words of the long syllable type (CVVC and CVCC). The monosyllabic forms of the short or medium syllabic structure are few, and practically all of them are particles, eg.

<u>F O R M.</u>		<u>E X A M P L E.</u>
bi	:	billaahelʒadiim.
wa	:	huu wa ʒaxuuh.
maa	:	maa juxruʒ.
fii	:	fii beetu.
laa	:	laa haadaa walaa haadaa.
baa	:	baa juxruʒ
lam	:	lam juxruʒ.
min	:	min el beet.
an	:	saʒal ʒan el beet.
cam	:	cam beesa.
law	:	law qaam.

There are particles of the long syllabic structure such as

fiin	:	feen ʒant,
muuf	:	muuf raajih,
c'eef	:	ceef haalac.

and others which are composed of two syllables such as :

lammaa : lammaa haqar.

These particles are not classified as words in this work since they are :

- a) incapable of fitting into a morphological typical form,
- b) incapable of receiving affixation; indeed some of them are used as affixes such as 'bi'.
- c) incapable of isolation, apart from laa, cam, feen and ceef¹.

No word in the dialect is made up of a medium syllable only. Some words (which are monosyllabic) are composed of a long syllable such as

'qaal'	and	'ḡabd'
'baaḡ'	and	'ḡudr'
'raah'	and	'rabʃ'.

The A.D. word is thought to be systematically made of three radicals, as can be seen in the structure of the typological forms. Of the above examples, the three words 'ḡabd' - 'ḡudr' - and 'rabʃ' are clearly made up of three radicals. But in the case of 'qaal' - 'baaḡ' - and 'raah' only two of the radicals are found in the word itself; the third appears in the formal scatter, the paradigm or the ordered series of words. Thus the following can be given :

1. See the definition of 'Word', p. 44

{ gaal = he said	{ baaζ = he sold
{ aqwaal = sayings	{ baajiζ = seller
{ raah = he went	
{ raajih = he is going.	

The 'w' in the first scatter, the 'j' in the second and third are not infixations; they are radicals. These radicals appear in the scatter, not in the word; one of the most useful devices to examine such a radical is to put in the scatter a word modelled after a morphological typical form in which the place of the examined radical is countered by a double consonant. In the cases above the typical form is 'fa^{cc}aal' and the words modelled after it are :

qawwaal , bajjaaζ , etc.

This discussion is thought to back the suggestion that the A.D. word is systematically formed of three radicals. These three radicals are formed into one syllable as above or into two syllables : this means in the unaffixed words: eg.

catab	-	citaab	-	cutub
ʃamal	-	ʃamiil	-	ʃamaal
hasuud	-	ʃudaaζ	-	sawis
caatib	-	qirab	-	huraam.

which represent various morphological typical forms (see p. 50). Some affixed forms as well (see p. 58) are in the disyllabic structure, eg.

juctub, jihrim, jiruuh.
mactuub. jirmii, ermii, etc.

Trisyllabic, quadrisyllabic and quinquisyllabic words are all with affixation. A word of one of these structures can be prefixed, infix, suffixed or all together. The examples below illustrate a word with the three types of affixation at the same time :

Prefix.	First radical.	Infix.	Rest of radicals.	Suffix.	The word in full.
mu	h	ta	mil	iin	muhtamiliin. radicals: 'h m l'

Impossible patterns :

The typical morphological forms (p. 50) are, in a sense, a positive statement of the possible word-pattern in the dialect. The impossible patterns of the dialect, moreover, can be stated here. The two aspects of word formation (the possible and impossible patterns) are complementary, and read together should help to form an opinion of and insight into the morphological as well as phonological system of the dialect. The impossible patterns are :

- 1 - a word with the VC syllable as medial or final,
- 2 - a disyllabic word with initial VC having the second syllable as short,
- 3 - a disyllabic word, both syllables of which are of the CV type, barring the second being an affix, eg. mara.
- 4 - a disyllabic word of the structure CVV + CVCC.
- 5 - a word having CVCC as initial or medial.
- 6 - a trisyllabic word ending in CVVC + CVCC,
- 7 - a quadrisyllabic word beginning in a long syllable (CVVC or CVCC).
- 8 - a word with more than four syllables of the same type in succession; words of four similar successive syllables are possible, eg :

baqaratu : mustahmilcum .

THE SYLLABIC STRUCTURE AND DISTRIBUTION.

It has already been stated that :

1 - Six syllabic forms occur in the A.D. phonological system. These are represented as follows :

- | | |
|------------|-----------------------------|
| 1 - VC , | 2 - CV , |
| 3 - CVC , | 4 - CVV , |
| 5 - CVVC , | and 6 - CVCC , (see p.133). |

2 - The A.D. word (without affixation) is systematically of three radicals formed into one or two syllables (see p.136)

3 - With affixation, the A.D. word may amount to five syllables as in 'muhtamiliinu' which can be analysed as follows :

Prefix.	First radical.	Infix.	Rest of radicals.	Suffix 1.	Suffix 2.
mu	h	ta	mil	iin	u

The following represents an account of the structure and distribution of these syllables, taking each of them separately :

1 - VC :

This syllable (invariably with the extra-systemic vowel e) occurs initial in the word and initial or medial

in the spoken group. A prosodic glottal stop may precede it when the syllable is initial in the spoken group. This glottal stop^{is} traditionally called 'hamzatulwasl' in Arabic linguistic literature. The syllable preceded by the stop, however, is only one of three possibilities of realization; these are 'ʕvc', as described above, 'vc' and 'c', eg.

(Phonetic transcription)

<u>ʕel'walpɔ</u>	<u>el'walpɔ</u>	<u>l'walpɔ</u>
<u>ʕes'taxrɔʃ</u>	<u>es'taxrɔʃ</u>	<u>s'taxrɔʃ</u>
<u>ʕen'tæ ha: (h)</u>	<u>en'tæ ha: (h)</u>	<u>n'tæ ha: (h)</u>
<u>ʕex'rɔʃ</u>	<u>ex'rɔʃ</u>	<u>x'rɔʃ</u>

All this detail, however, is in relation to initial position in the spoken group, i.e. in one continuous utterance between ^{two} ~~the~~ pauses. When this syllable is medial in the spoken group, i.e. initial in a non-initial word, the structure is permanently 'vc', eg.

(Phonetic transcription).

,qa:m el 'walpɔ ,
,lpw es'taxrɔʃ ,
,lpw en'tæ ha: (h) .

This syllable does not occur stressed; it is always unstressed.

2 - CV :

This syllable is found both stressed and unstressed with one of three vowels unit possibilities with the prosody of shortness *casra* - *fatha* - and '*damma*'. It can be initial, medial or final, in the word or in the spoken group. In final position in the word or in the spoken group the vowel of this syllable is a suffix, eg.

(Phonetic transcription).

<u>baqarɐ</u> <u>hamrɐ:(h)</u> ,	<u>ɕammü</u> <u>ɕali:</u>	<u>ɕarɐbü</u> <u>bilɕa:(h)</u>
(a red cow)	(his uncle, Ali)	(he hit him with the stick.)

In final position in the spoken group, this syllable is marked with the prosodic feature of aspiration, eg.

baqarɐh, , ɕammü(h), ɕarɐbü(h).

This free distribution of the syllable is tabulated on p. 146

3 - CVC :

This syllable is also freely distributed with anyone of three vowel-unit possibilities '*casra*' - '*fatha*' and '*damma*' with the prosody of shortness, eg.

jis taɕ mal hum,
mus taɕ mil hun,
jɪsturhum.

When this syllable begins and ends with the same unit

or two closely related ones from the point of view of articulation, it is realized as one long consonant of the type of the initial in the syllable, eg.

J.	P.I.
ʃuftuminbaɪid	ʃuftummbaɪ ¹ ɪd

Similarly, when the ultimate of the preceding syllable is similar in articulation to the two consonants of this syllable, the whole syllable is realized as a duration of this consonant, eg.

J.	P.I.
xaraʃat tit maʃʃaa	xaraʃat ² ttt maʃʃa:ɪ

Perceptively speaking the 'ttt', a realization of 'CCVC', does not present any duration query.

4 - CVV :

This syllable is also freely distributed and occurs with one of five vowel units with the prosody of length, ('casra' - 'xafqa' - 'fatha' - rafqa' and 'qamma') in initial and medial position in the word. In final position in the word, it does not occur with xafqa and rafqa, eg.

hiila - ʔaada - suura - yeeru - toobu,
 ʃamiila - haʃaatu - suʃuudu - haameetu - jihoofil, but only:
 raadii - daʒaa - ʃaafuu.

-
1. The second 'm' here serves as a length mark.
 2. 'tt' are treated as length mark.

It can be stressed and unstressed, as can be seen in the table of distribution (p.146).

5 - CVVC :

The CVVC syllable is found initial, medial and final in the word, with five possibilities of vowel units with the prosody of length ('casra' - xafqa' - 'fatha' - 'rafqa' - and 'qamma'). In initial and medial positions it is either stressed or unstressed, but in final position in the spoken group, it is always stressed, as can be seen in the table of distribution, eg.

qaal - qaalluhum - xaarfā - muxaaṣimīn
muxaaṣimīnhum - salaam .

6 - CVCC :

This is only found as final syllable in the word, but in the spoken group it can be initial, medial or final and is stressed in all cases (whether a primary or a secondary stress). When it has secondary stress, medial, ended by a double consonant and followed by a consonant, the doubling at the end of it is perceptively markedly less in duration than in other positions eg. cf.

hadd qaallac	:	haddelbeet
saḥḥabab jamssan	:	saḥḥel barmil.

It occurs with one of three vowel unit possibilities ('casra' - 'fatha' - 'qamma') with the prosody of shortness eg. himl - qarab - ʿumr.

TABLE OF SYLLABIC DISTRIBUTION.

Syllables	In the Word.						In the spoken Group.					
	Initial.			Medial.			Initial.			Medial.		
	S.		U.	S.		U.	S.		U.	S.		U.
	S.	U.		S.	U.		S.	U.		S.	U.	
V C	-	+		-	+		-	+		-	+	
C V	+			+			+			+		
C V C	+			+			+			+		
C V V	+			+			+			+		
C V V C	+			+			+			+		
C V C C	-			-			+			+		

S = Stressed
U = Unstressed

+ = possible occurrence
- = impossible occurrence

CHAPTER VIII.

P r o s o d i e s .

-- --

P R O S O D I E S .

The use by Sweet of the two terms 'synthesis' and 'analysis' showed the need for prosodic studies.¹

A syntagmatic treatment of an utterance will reveal that if analysis aims at the description of the smaller items, or, as in American phonetic literature 'segments', abstracted from the continuum, synthesis concerns itself with the combinations as they appear. This covers aspects such as position-marking and categorical interrelation (eg. transitive relations, word-order and concord). The former (position-marking) is prosody, but the latter (categorical interrelations) is syntax.²

Prosodies are in the main positional, i.e. therefore features of isolated sounds are not to be called prosodical, since in isolation there is no relative position to be marked. Such features of isolation are, for practical reasons only, capable of being called 'phonetic'. Looking at language material from a syntagmatic point of view, any phonetic features characteristic of and peculiar to such

1. Sweet, Primer of Phonetics, pp.7 and 44.

2. See Remarks on Syntax of the dialect, p. 69

positions or junctions can just as profitably and perhaps more profitably be stated as prosodies of the sentence or word.¹ Whatever feature is connected with position cannot be considered as 'phonetic', i.e. cannot be treated as such, as far as sounds are concerned. In A.D., a prosodic feature is either related to :

- a) medial position, i.e. junctions,
- b) final position,
- c) various positions.

Under (a) can be counted junction, zero-position and anaptyxis; all are found in a junction of two consonantal units. Under (b) are diphthongization and opener vowel quality; both are in the final syllable in the spoken group. But (c) covers voicing and un-voicing, tensity and laxity, glottalization, aspiration, W.N.Y., Quantity, Prominence and intonation. Each of these functions in more than one position. The total of these prosodies can be distributed as follows :-

- | | | |
|----|----------------------------------------------|-----------------|
| a) | { Junction
(Zero - plosion
Anaptyxis } | medial position |
| b) | { Diphthongization
(Opener vowel quality) | final position |

1. Firth, Sounds and Prosodies,
TPS. 1948. pp.127 - 50.

- | | | | |
|----|------------------------|---|--------------------|
| c) | (Voicing and unvoicing | } | various positions. |
| | (Tensity and laxity | | |
| | (Glottalization | | |
| | (Aspiration | | |
| | (W. N. Y. | | |
| | (Quantity | | |
| | (Prominence | | |
| | (Intonation | | |

Prosodies function in the syntagm, whether it be a word, a phrase or a sentence as long as it constitutes a linguistic spoken group of sounds. Such features may be additional to sounds, but certainly are an integral part of the syntagm. 'An utterance in actual speech, however, is more than merely a succession of vowels and consonants, following one another in a certain order. Over and above these there are particular variations in the length of individual sounds, in the loudness and in voice pitch - as much a part of the utterance as the segmental sounds, and in many languages just as important.¹'

Prosodies are interrelated with the contexts in which they occur. Tied up together, as they are, they are, therefore, the functions of their contexts. which in their

1. Bloch & Trager : Outline of Linguistic Analysis, p. 34.

turn are defined or marked by prosodies; thus, prosodies are, so to speak, the syntagmatic road-marks or milestones throughout the utterance. A prosodical feature, then, is necessarily meaningful at one or the other of the various linguistic levels from phonological up to semantic. To illustrate this, junctions and intonation may be given as examples; the former are significant at a phonological, the latter at a syntactic, level. A process of contextualization for defining the meaning does make use of every available prosodical feature in the utterance. 'And the process of contextualization is functional in the highest degree'.¹

Since this work is based on the functional point of view, it may well be desirable at this junction to state tentatively what is the function of every prosodical feature in A.D. The following is a survey of prosodical features, given in the order already mentioned :

1 - The prosody of junction involves either or both of two processes in the two successive consonants :

a) unity of the place of articulation of the two consonants, which are different in the system in relation to the type of articulation, such as alveolar 'n' followed by dental 'q' in a junction,

1. Firth, *Linguistics and the Functional point of view*, Amsterdam XVII (1 February 1934).

which are phonetically both dental, eg.

J.
endamm

P. I.
endamm

This process is traditionally termed 'homorganic articulation.'

b) unity in the manner of articulation of the two successive consonants which in the system, are with different manners of articulation,¹ such as phonological 'ɣq' = phonetic 'qq', eg.

J.
balayqasdu

P. I.
balayqasdu h,

This might be expressed as 'homotypical articulation'; a term used by ^{Martin Joos} Bloch and Trager.²

2 - The prosody of zero-plosion is found in two different contexts :

- a) a double plosive consonant, systematically treated as a succession of two consonants, the first of which unexploded, eg. 'qaddam' ,
- b) a favourable context for this feature is two different plosives in succession, eg. 'wafadɟariiqɑ'.

1. The term 'manner of articulation' here includes, beside plosion, friction, etc., the types of correlations such as voice, etc.
2. Acoustic Phonetics, p.116.

In the former, prosody functions as differential, i.e. differentiates between a double and a single consonant: in the latter, it is a mark of junction.

3 - Anaptyxis, too, is a position marker, the type of position it marks is either :

a) a junction of two consonants of distant places of articulation, such as uvular and alveolar, eg.

<u>J.</u>	<u>P.I.</u>
ʕaql	<u>ʕΔq^ol</u>
jiqnaʕ	<u>jiq^onaʕʕ</u>

b) junction where plosion is complete, to the exclusion of zero plosion, eg.

<u>J.</u>	<u>P.I.</u>
maʕbuur	<u>maʕ^obu:ʕ .</u>

4 - Diphthongization is a mark of final position in the spoken group. More specifically, it is a mark of final CVV with either a 'casra' or 'qamma' vowel unit.

5 - Opener vowel quality is again a mark of a final syllable, but the syllable, or rather syllables, in this case are CV, CVC, and CVCC, with either a 'casra' or 'qamma' vowel-unit.

6 - Voicing and unvoicing, in one of its forms an aspect of what has been termed 'homotypical articulation',

is also position-marking; junction marking is only a part of this function, since this is a prosodic feature of other positions beside junction; for example, final position in the spoken group is a position for unvoicing, eg.

J.	P.I.
baab	<u>ba:b</u>

7 - The prosody of tensity and laxity has two major functions :

- a) the differentiation between single and double consonants.
- b) defining the position in the spoken group; since this prosodic feature is connected with positions rather than sounds or units. There are eight possible positions of a sound in the spoken group (see prosody of tensity and laxity) of A.D. each of which differs from the other as far as this feature is concerned.

8 - The prosody of glottalization (see the definition under the appropriate heading) marks, for example, the initial position of ' ʔ ' the medial position of ' ʔʔ ' and the final position of a single or double ' ʔ ' (i.e. ' ʔ ' or ' ʔʔ '). It also marks :
 (1) 'r' and 'ɾ' in the position defined under glottalization,

(2) the final open syllable in the spoken group when spoken on a rising tone or when stressed.

(see glottalization p. 189).

9 - Aspiration shows the final position of a final open unstressed syllable or spoken on a falling tone (see p. 194). It is also a permanent feature of exploded t and c, though it varies according to tensity and position, eg.

(Phonetic Trans.)	<u>rem:t_h</u> ,
	<u>be:t_h</u> ,
	<u>fɪ:c_h</u> ,
	<u>baqarɸ_h</u> ,

10- The function of the prosody of W.N.Y. is differential in character, i.e. built on opposition. To illustrate this point, the two utterances (Phonetic trans.) ʃabɪh and səbɪh are to be examined. At both phonetic and phonological levels, the initials of the two utterances (i.e. ʃ and s) are different and can be opposed in the utterances on the basis of W.N.Y.; the ' ʃ ' is emphatic and therefore is classed under the 'W' of W.N.Y., while ' s ' is non-emphatic and classed under the 'Y' of the combination.

11 - The prosody of quantity has a distributional function, i.e. a function that is related to linguistic patterning of long and short, double and single. It is therefore differential in the system but not necessarily parallel to duration in actual speech. The two words 'qatal' and 'qaatal' as well as 'qatal' and 'qattal' illustrate the function of quantity by the opposition of 'a - aa' in the first pair and 't - tt' in the second.

12 - The function of prominence (or more specifically stress) can be related to tensity and laxity on the one hand, and to intonation on the other. In relation to the former, prosody, it is shown by the fact that the A.D. stress is expressed by tensity rather than tone, i.e. by air volume rather than pitch. The relation between stress and intonation is that only stressed syllables coincide with non-level tones, i.e. falling and rising tones. Two other features are connected with stress: viz. vowel quality and rhythm. Its connection with the former is that no A.D. central vowel (i.e. of the extra systemic variants transcribed 'ə') is stressed; and its relation to the latter is seen in the definition of linguistic rhythm as a succession on approximate equidistances of stressed syllables. Stress is one of the factors of prominence.

13 - Intonation is another factor of prominence. Since A.D. is not a 'tone language', intonation has no lexical function in it. It has, however, both syntactic and semantic functions. Affirmation and interrogation (syntactic categories) are largely differentiated by intonation in sentences such as (ʎanta qult haadaa). and (ʎantaqult haadaa ?) A phonetic function of intonation is the utterance of which it is an integral part.¹ The term semantic is a very loose one, since there is no agreement on its connotation. There is not only a number of 'linguistic semantics', but also philosophical semantics as well. Therefore the terms 'semantic' and 'semantics' are ambiguous for the main reason 'that logicians, psychologists and others have so overworked that term that it has become scientifically unusable'.² When it is stated, therefore, that intonation has a semantic function, the writer is aware of the loose use of the term, and has used it here from the functional point of view and especially with regard to the technique of semantics established by Prof. Firth with the employment of the concept of context of situation.³ The semantic function of intonation is seen

1. See: M. Schubeger, The Role of Intonation in Spoken English, p.1.

2. Ulmann, The Principles of Semantics, p.6.

3. Firth : Technique of Semantics.

in the variation, not only of pitch, but also of the general arrangement of an intonation pattern (see the meaning of 'pattern', p. 221) from one utterance to the other according to difference of context.

a) PROSODIES OF MEDIAL POSITION .

-- -- --

JUNCTIONS

Homorganic and homotypical articulations .

Under this heading, attempt will be made to discuss the two consonants in junction and the two vowels in succession. The junction of two consonants is found within the word as well as at word-junctions, but the junction of two vowels is found only in the latter case. At the junction of two consonants, there may be or there may not be a homorganic articulation; by this term is meant the unity or closeness of the place of articulation of two consonants otherwise without organic affinity in the system. By homotypical articulation is meant the unity of the manner of articulation, or, in one or more correlations, this being contrary to the systematic classification of the two consonants in the junction.

To begin with, four general types of articulation should be recognised; there are :

- 1 - labial : including labial and labio-dental units, and can be symbolised as 'l' . The extension of application of the term labial, and of the three following terms has been made for practical reasons as will be seen later.
- 2 - dental : covering dental and denti-alveolar units and is symbolised as 'd' ,

- 3 - alveolar : denoting alveolar units alone and is symbolised as 'a',
- 4 - palatal : embodying palatal, velar and unvelar units and is symbolised as 'p' .

Thus we have :

l = labial, d = dental,
a = alveolar, p = palatal.

There is no pharyngeal or glottal homorganic articulation. For there to be homorganic articulation, no junctional context is favourable that can be symbolised :

l - d, l - p, d - l, d - p,
 p - l, a - a,

nor is any combination of such symbols possible in which 'a' is the classification of the unit following, i.e. no homorganic articulation is there in the junctional contexts:

l - a, d - a, and p - a.

Sequences favourable for homorganic articulation are,

l - l, d - d, p-p, a - l, a - d, a - p.

Now of sixteen possible combination in two of the four symbols, fifteen have been counted, the favourable for homorganic articulation among these being those with two identical symbols (except a-a) and those in which 'a'

precedes a different symbol. The remaining combination p - d requires special treatment, since it is favourable only when 'd' denotes an emphatic dental unit (ḡ, ḡ, ṭ) and not an unemphatic one (s-z-t-d). Before the emphatics, every unit classified as palatal in this symbolization (i.e. palatals, velar and unvelar) is realised as back palatal in homorganic articulation, with the raising of the back of the tongue in pronouncing the emphatic. This includes 'ḡ' and 'C' units which are then realised as 'g' and 'k' respectively. At this juncture, articulatory combinations favourable for homorganic articulation have been listed, an example of each given, as follows :

Combination symbols.	Unit symbols.	Sound symbols.	Junction	Phonetic Implication.
l - l	ḡ - f	ḡf	juḡrubfaraḡ	<u>juḡrubḡ araḡ</u> .
d - d	ḡ - z	zz	qabaḡziḡaada	<u>qabazziḡe:da</u> , h
p - p	ḡ - ḡ	ḡḡ	faraḡ aajib	<u>faraḡa:jib</u>
a - l	n - ḡ	nḡ	jinfaz	<u>jinfaz</u> ,
a - d	n - ḡ	nḡ	jundur	<u>jundur</u>
a - p	n - ḡ	pḡ	jinfah	<u>jinfah</u> .
p - d	ḡ - ḡ	gḡ	xaraḡsaalih	<u>xaragga:lih</u> .

All homorganic articulations have been listed in the chart for function prosody, (p. 165) From that table, it will be seen that homorganic articulation either,

a) brings the two consonants of adjacent places of articulation to one place; in all cases (except $bf = b\phi$) the place in which such articulation is found is also the place in the systematic classification , of that of the following, rather than the preceding consonant in the junction, e.g.

$$cq = qq,$$

b) brings the two consonants of places of articulation far apart into one place or adjacent places of articulation, eg.

$$nq = Nq \quad \text{and} \quad \text{ʒʒ} = gʒ .$$

In the case of 'nq', the preceding unit 'n' depends in its systematic identity, more upon the manner of articulation (nasality) than upon the place of articulation (alveolum). So the phonetic variant (or allophone) N, a nasal, is still in harmony with the phonological classification.

The common place of articulation in the case of 'ʒʒ' = gʒ' is the velum, since ' ʒ ', an emphatic, requires the back of the tongue raised for its articulation.

Homotypical articulation, as already stated, concerns correlations (including the manner of articulation) rather than articulatory types. In phonetic literature, the two processes (homorganic and homotypical) are treated under the same heading of 'homorganic articulations', but for

purposes which will later be clear, the two processes are dealt with separately in this work.

Nasality and voice are the two features involved in homotypical articulation; the former in the junction $b - m = 'mm'$, the latter in various junctions described under 'Voicing and Unvoicing'.

Sometimes homorganic and homotypical articulations operate in the same junction; for example, in the junction $'d\text{ṣ} = 'd\text{ṣ}'$, the raising of the back of the tongue in the articulation of $'d'$ is homorganic and the unvoicing is homotypical.

Both features are pertinent of the sound in this context.

Vowel junction in A.D. is a function of word junction when the preceding word ends, and the following begins with a vowel. The preceding word can end in 'casra', 'fatha' or 'qamma' short or long, but not in 'xafqa' or 'rafqa' (see the CVV syllable under syllabic structure, p. 144). A vowel that begins a word must necessarily be that of 'VC' initial in the word and in the spoken group; the 'VC' vowel is the extra-systematic $'e'$. This will make possible the following vowel junctions :

- | | | | | | |
|---|---|--------|-----------------|---|--------------|
| 1 | - | i + e | , eg. binti | + | estaxaraḡat, |
| 2 | - | ii + e | , eg. ḡammii | + | eḡḡeex, |
| 3 | - | a + e | , eg. bitalaata | + | el waahid, |

- 4 - aa + e , eg. jitwaqqaa + eʃʃarr,
 5 - u + e , eg. waladu + ezzaʃʃir,
 6 - uu + e , eg. daxaluu + el beet.

In the phonetic implications of these vowel junctions, it will be found that :

- a) the phonetic vowel of the junction is always short, ^{induration.}
 b) when the preceding unit is 'casra', the phonetic vowel in the junction is a short variant of 'casra'; which variant it is, according to ^{to} the preceding consonant, eg. it might be ʃi, qr , bī , ʒr , ni , ti or ʃi; If the preceding unit is 'qamma', the phonetic vowel is a variant of this unit which might be, eg.

sa , qu , bū , ʒu , nū , tʊ or ʃu ;

In the case of 'fatha' being the preceding unit, the phonetic vowel is invariably ' e ', as can be seen in the following phonetic transcription of the above examples :

- 1 - bintistaxrɔʃɛt ,
 2 - ʒammusse:x ,
 3 - biteelɔ:tɛl wa:hɛd ,
 4 - jitwaqqɛʃʃɛrr ,
 5 - walɔduzzaɣr:r ,
 6 - daxalulbe:t .

The following table is a statement of the relation between phonological consonantal units (see The Con sonantal Units Defined, p.90) and the phonetic consonantal sounds described in the phonetic section of this work. At a purely phonological level, the table itself is a statement in detail of the homorganic and the homotypical articulations already discussed. The headings in the table, both vertically and horizontally arranged, are symbols of phonological units, but the multitude of symbols shown as covered by these headings are phonetic symbols , denoting such features as anaptyxis, voicing and unvoicing; the former is denoted by (e) suspended above the line-level, the two latter by diacritical marks (v and o) under the symbol respectively.

Preceding consonant

F O L L O W I N G C O N S O N A

g | b t f h x d r z s j p q t c y f q c l

g	gg	gb	gt	gf	gh	gx	gd	gr	gz	gs	gj	gp	gq	gt	gc	gy	gf	gq	gc	gl
b	bg	bb	bt	bf	bh	bx	bd	br	bz	bs	bj	bp	bq	bt	bc	by	bq	bc	bl	
t	tg	tb	tt	tf	th	tx	td	tr	tz	ts	tj	tp	tq	tt	tc	ty	th	tg	tc	tl
f	fg	fb	ft	ff	fh	fx	fd	fr	fz	fs	fj	fp	fq	ft	fc	fy	ff	fq	fc	fl
h	hg	hb	ht	hf	hh	hx	hd	hr	hz	hs	hj	hp	hq	ht	hc	hy	hf	hq	hc	hl
x	xg	xb	xt	xf	xh	xx	xd	xr	xz	xs	xj	xp	xq	xt	xc	xy	xf	qx	xc	xl
d	dg	db	dt	df	dh	dx	dd	dr	dz	ds	dj	dp	dq	dt	dc	dy	df	dq	dc	dl
r	rg	rb	rt	rf	rh	rx	rd	rr	rz	rs	rj	rp	rq	rt	rc	ry	rf	rq	rc	rl
z	zg	zb	zt	zf	zh	zx	zd	zr	zz	zs	zj	zp	zq	zt	zc	zy	zf	zq	zc	zl
s	sg	sb	st	sf	sh	sx	sd	sr	sz	ss	sj	sp	sq	st	sc	sy	sf	sq	sc	sl
j	jg	jb	jt	jf	jh	jx	jd	jr	jz	js	jj	jp	jq	jt	jc	jj	jf	jq	jc	jl
p	pg	pb	pt	pf	ph	px	pd	pr	pz	ps	pj	pp	pq	pt	pc	py	pf	pq	pc	pl
q	qg	qb	qt	qf	qh	qx	qd	qr	qz	qs	qj	qp	qq	qt	qc	qy	qf	qq	qc	ql
t	tg	tb	tt	tf	th	tx	td	tr	tz	ts	tj	tp	tq	tt	tc	ty	th	tg	tc	tl
c	cg	cb	ct	cf	ch	cx	cd	cr	cz	cs	cj	cp	cq	ct	cc	cy	cf	cq	cc	cl
y	yg	yb	yt	yf	yh	yx	yd	yr	yz	ys	yj	yp	yq	yt	yc	yy	yf	yy	yc	yl
f	fg	fb	ft	ff	fh	fx	fd	fr	fz	fs	fj	fp	fq	ft	fc	fy	ff	fq	fc	fl
q	qg	qb	qt	qf	qh	qx	qd	qr	qz	qs	qj	qp	qq	qt	qc	qy	qf	qq	qc	ql
c	cg	cb	ct	cf	ch	cx	cd	cr	cz	cs	cj	cp	cq	ct	cc	cy	cf	cq	cc	cl
l	lg	lb	lt	lf	lh	lx	ld	lr	lz	ls	lj	lp	lq	lt	lc	ly	lf	lq	lc	ll
m	mg	mb	mt	mf	mh	mx	md	mr	mz	ms	mj	mp	mq	mt	mc	my	mf	mq	mc	ml
n	ng	nb	nt	nf	nh	nx	nd	nr	nz	ns	nj	np	nq	nt	nc	ny	nf	nq	nc	nl
h	hg	hb	ht	hf	hh	hx	hd	hr	hz	hs	hj	hp	hq	ht	hc	hy	hf	hq	hc	hl
w	wg	wb	wt	wf	wh	wx	wd	wr	wz	ws	wj	wp	wq	wt	wc	wy	wf	wq	wc	wl
j	jg	jb	jt	jf	jh	jx	jd	jr	jz	js	jj	jp	jq	jt	jc	jj	jf	jq	jc	jl

ZERO -PLOSION .

By the term zero - plosion is meant the absence of the last of three factors involved in what is termed 'plosion'. These are :

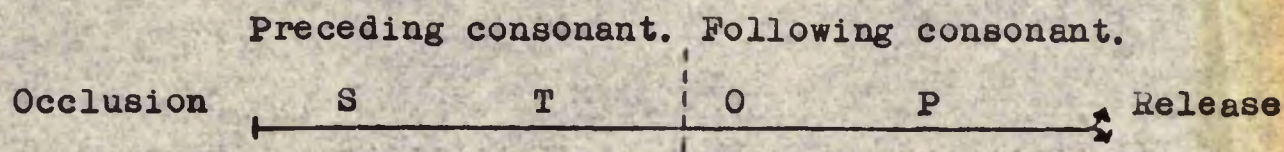
- 1 - occlusion, which is the closure, as an organic movement, of the air passage,
- 2 - stop, which is the continuation of this closure,
- 3 - release of the stop, i.e. opening the closure and letting the enclosed air pass.

Zero-plosion, then, is only an occlusion and a stop. Though this feature is found in more than one form in the dialect, one of these is the object of this term. The different forms of this feature are :

- 1 - doubling which is systematically looked upon as a succession of two consonants; when these are plosive, the first is considered unexploded;, i.e. with zero plosion.
- 2 - the two plosive consonants of the same place of articulation which are with homotypical articulation (eg. td = dd, dt = tt) are another aspect of this feature.

3 - the two plosive consonants with different places of articulation, the first of which is not released, represent the third form of this feature.

It is this third type of absence of plosion that represents the prosody of zero-plosion. The following diagram illustrates this feature :



Thus, the absence of plosion is a pre-consonantal feature or (rather) a feature of consonantal junction both like doubling and the type of homotypical articulation described above.

The prosody of anaptyxis is necessarily a sign, in a junction of two plosives, of complete plosion.

'Complete plosion' is a term that includes pulmonary and ejective plosions alike. A prevalent feature in the absence of plosion (zero plosion) is the unity of the close position to each other of the two places of articulation of the two consonants in junction. The table on the following page is a statement of this prosodic feature in the dialect :

Preceding consonant	Following consonant.									Remarks.
	b	q	t	d	t̥	ʃ	c	g	ɣ	
b	*	x	x	x	x					
q		*	x	x	x					
t		⊗	*	<u>x</u>	⊗					
d		⊗	<u>x</u>	*	⊗					
t̥		x	x	x	*					
ʃ	⊙					*	<u>x</u>	⊗		
c						<u>x</u>	*	⊗		
g	x		x		x	x	x	*		
ɣ									*	

* = doubling

x = prosody of zero plosion with different places of articulation

⊗ = zero plosion with homorganic articulation.

x = zero plosion in a junction of correlatives.

⊙ = plosion combined with anaptyxis.

a blank space = complete plosion.

For reference, the following kymograms are given with the junctions opposite :

kymograms	1 -	<u>jrqqi:</u>	qq.
"	2 -	<u>ɛadqa</u> (h)	qq.
"	4 -	<u>ɛattal</u>	tt.
"	6 -	<u>ɣactær</u>	ct.

kymograms	8 -	<u>maqtu: ɛ</u>	qt.
"	9 -	<u>maqbu: {</u>	qb
"	10 -	<u>sæ rΔqcitæ :b</u>	qc.
"	11 -	<u>sæ ɣ ɣ a l</u>	ɣ ɣ
"	12 -	<u>maʃ^əbü: ʃ</u>	ʃb
"	13 -	<u>qΔbaqtæ l v: tæ (h)</u>	qt
"	14 -	<u>jid ɣ ab</u>	d ɣ
"	15 -	<u>madqu: q</u>	dq
"	16 -	<u>jiʃ ɣ ar</u>	ʃ ɣ
"	19 -	<u>haqd</u>	qd
"	22 -	<u>ma ɣ c ɣ :</u>	ɣ c
"	23 -	<u>ɣ abci:</u>	bc
"	24 -	<u>da: jΔq ɣ Δxu: h</u>	q ɣ
"	25 -	<u>et ɣ asæ r</u>	t ɣ
"	26 -	<u>ji ɣ ba: (h)</u>	ɣ b
"	27 -	<u>ji l tæ:</u>	ɣ t.

ANAPTYXIS.

Anaptyxis is a function of a special type of junction; it is symbolised as (°) midway between line-levels in contradistinction to the (°) of the 'VC' syllable which is written at the same level as other symbols, i.e. line level. The type of junction in which this prosodic feature occurs is :

- 1 - a junction of two consonantal units the second only of which is classified as alveolar, eg.

qab°r - qab°r3:n - ʔabd°rabbu(h) - sa:b°ri:n.

- 2 - the junctions :

ʃ + b , eg. maʃ°bu:ʔ ,

ʃ + d , eg. maʃ°d

r + b , eg. ʔar°baʔa(h)

This feature is, in addition, a function of syllabic contexts; the anaptyctic vowel is found ,

- 1 - between the penultimate and the ultimate of the CVCC syllable, eg. qab°l,
- 2 - between the ultimate of CVCC and the initial consonant of the following syllable, eg. ʔarq°laʔʃ,
- 3 - between the ultimate consonant in CVC and the initial consonant in the following syllable, eg. jib°ni: ,
4. - between the ultimate consonant of CVVC and the initial consonant of the following syllable, eg.

qɑ:d^ori:n.

In the syllabic context No. 1, the syllable must be either a) followed by a consonant (not a vowel), or b) final in the spoken group, eg. qab^olha:d^o:(h, and qab^ol. When it is followed by a vowel, there is no context for anaptyxis, eg. qabl edqah^or.

The following examples illustrate this feature :

Syllabic Context 1.	Syllabic Context 2.	Syllabic Context 3.	Syllabic Context 4.
<u>sab^or</u>	, <u>qalb^orphɪ:m</u>	<u>sab^orü(h,</u>	<u>sa:b^ori:n</u>
<u>qab^ol</u>	<u>qalb^olp:hɪ:</u>	<u>qab^o(ü(h,</u>	<u>qɑ:b^oli:m</u>
<u>ʃub^on</u>	<u>qalb^ona:bɪd</u>	<u>ʃub^onü(h,</u>	<u>ʃɑ:b^oni:n</u>
<u>naʃ^ob</u>	<u>fɪ:lpnʃ^obe:tʊh,</u>	<u>maʃ^obü:ɾ</u>	<u>na:ʃ^obɪ:n</u>

b) PROSODIES OF FINAL POSITION .

-- -- -- --

DIPHTHONGIZATION .

This prosodic feature is found in final position in the spoken group. When the final syllable here is CVV and the vowel unit of this syllable is 'casra' or 'damma', the variant of this unit is always diphthongized. Palatographic evidence may help to back such statement. With any consonantal unit as the 'C' of CVV, there is a narrowing of the chalked area at the back of the artificial palatal on both sides of the median line, or even a complete wipe-off of this back area in some examples. Such wipe-off can be correlated to the closer position of the tongue than with any variant of these two units in other positions. Since no occlusion is compatible with vowel articulations, and none is heard during the pronunciation of the utterance, the only feasible treatment of such wipe-off is to correlate it to the acoustic impression of diphthongization of final close vowels. (This feature is not symbolized).

Palatograms for reference are :

			Of the Appendix.
1 - <u>maqqi:</u>	p.	58	" "
2 - <u>qa:qi:</u>	"	58	" "
3 - <u>muxti:</u>	"	58	" "
4 - <u>muḡti:</u>	"	58	" "
5 - <u>muxatti:</u>	"	58	" "
6 - <u>ṣawṣi:</u>	"	59	" "

7	-	<u>zɪlmi:</u>	p.	59	Of the Appendix
8	-	<u>zuffi:</u>	"	60	"
9	-	<u>qamhi:</u>	"	60	"
10	-	<u>qamri:</u>	"	61	"

OPENER VOWEL - QUALITY .

The prosody of opener quality is also connected with 'casra' and 'qamma' in final position in the word, (not only in the spoken group as in diphthongization) .

In final CV, CVC and CVCC in the spoken group, with either 'casra' or 'qamma' as the vowel unit of the syllable, whatever variant of these units is in this position is opener in quality. The symbol (4.) under the symbol for the close vowel indicates this prosodic feature, eg.

J.	P.I.
binti	<u>bīntī_{4.} h,</u>
bint	<u>bīnt</u>
haasib	<u>ha:si_{4.} b</u>
judrub	<u>jud^o rūb</u>
beetu	<u>be:t_{4.} h,</u>
ʕumr	<u>ʕumr</u>
bintʕammu	<u>bīnt ʕammū_{4.} h,</u>

c) PEOSODIES OF VARIOUS POSITIONS .

-- -- --

VOICING AND UNVOICING .

{ v = voicing. }
{ o = unvoicing).

In studying this feature of the A.D., two points must be taken into consideration :

- a) position in general,
- b) junction, a position in particular.

The term 'voiced' is traditionally used in two senses (1) as the contrary of voiceless and (2) the contrary of unvoiced, and it is in this latter sense that it is employed here.

a) Position in general.

There are eight possible positions of a consonant in a spoken group of A.D.

- 1 - initial.
- 2 - intervocalic.
- 3 - double medial.
- 4 - pre-consonantal medial. }
- 5 - post-consonantal medial } i.e. two consonants in
 junction.
- 6 - penultimate in the spoken group,

i.e. of final CVCC,
- 7 - single ultimate in the spoken group.
- 8 - double ultimate in the spoken group.

Positions 1, 2 and 3 are not susceptible to this type of prosody, i.e. in relation to voicing and un-voicing. There is similarity of systematic and phonetic descriptions of any consonant in one of these positions. What is systematically classified as voiced is found phonetically voiced in these positions and vice-versa. Positions 4 and 5, however, will be treated under the heading 'junction' for they cannot be treated except as such. The remaining positions, 6,7, and 8, are to be treated as follows :-

The penultimate in final CVCC in the spoken group is similar, in relation to this prosodic feature to the pre-consonantal in the junction. This latter will be discussed under 'junction'. The single and double ultimates in the spoken group will be treated separately since they differ in relation to the consonantal and to the syllabic structure in which they occur. The single ultimate can end a final CVC, CVVC or CVCC with two different consonants as penultimate and ultimate, eg.

qatal - qitaal - qatl

but the double ultimate fills both positions (penultimate and ultimate) at the same time.

The single ultimate can be :

- a) post-vocalic, i.e. the ultimate CVC and CVCC in the spoken group, and then all voiced consonants are partially unvoiced, eg.

^{crip}
Phonetic translation:

ʔa:d - ʔa:b - fa:d - tæ:h - da:ʔ
za:ʔ - ʔa:l - zæ:m - ʃɛ:n -

b) post-consonantal, i.e. ultimate of CVCC in the spoken group, where every voiced consonant is partially unvoiced, except that (1) when the penultimate is voiceless, then the ultimate is wholly unvoiced, and (2) w and j are, invariably, unvoiced, eg.

ʔabd , haʃb but rɒmj
 and sihr , lɔfd but ʔafw

In the case of the double ultimate, the treatment in the phonetic sense must be of a final long consonant since the alternative, i.e. speaking of 'a first' and 'a second' elements of the double is phonological. It can only be after such a phonetic statement (that final voiced consonants are partially whispered) that a systematic double final unit can be related to the feature of voicing and unvoicing because if it is related to this prosody before a phonetic statement of this kind, one finds it difficult to handle such relation without splitting the double unit into two singles, to conclude that the second of these is unvoiced. Such statement like this latter is obviously open to criticism since a double consonant, though systematically double, is indivisible. A

A phonological statement of this feature will then be a final voiced double consonant in the spoken group (except in the case of ~~z~~, w and j), partially unvoiced, eg.

Phonetic Trans. haqq Kymo.No. 19
 but hajj

The systematic dual nature of a double consonant, however, can be ascertained in the formal scatter or the paradigm, eg.

Singular halluuf ,
Plural halaaliif.

And the phonetic treatment of this double consonant as a long consonant does not neglect its duplicity, but may be regarded as treating the matter from a different angle.

b) Junction.

Whilst under 'position', only the feature of 'unvoicing' has been treated, under 'junction', both voicing and unvoicing will be dealt with. Here, voicing and unvoicing are sometimes features of the preceding, at other times of the following, consonantal unit, i.e. both pre-and post-consonantal.

A statement of voicing is as follows :

- 1 - p is voiced before z, and is phonetically transcribed z, eg. rpfa_z z₃:np_b Kymo. 34.

- 2 - x is voiced before ɣ, and is transcribed ɣ, eg.

oʃʃe:ɣa:lib

- 3 - f is voiced before d, d, z and ʒ; before z, it is transcribed 'v', eg. cf.

<u>jivzæɣʃ</u>	Kymo	36
<u>jifʳɔh</u>	"	38
<u>jifʳni:</u>	"	39
<u>ɣafwa:ʒ</u>	"	40
<u>ɣafʒed</u>	"	41
<u>jifʒɛɣʃ</u>	"	42
<u>ɣafdi:</u>	"	43
<u>jifdɔh</u>	"	44

- 4 - h is voiced before every voiced consonant, eg.

<u>mahɣu:q</u>	Kymo	53
<u>lphd</u>	"	67
<u>mahq</u>	"	68

- 5 - ɣ is voiced before every consonant but not when doubled, eg.

<u>maɣcɔ:</u>	Kymo	22
---------------	------	----

- 6 - t is voiced before d, d and z, before d, it is transcribed ɖ, but before d ~~or~~ the symbol is d, eg.

<u>etɖarɔb</u>		
<u>eddeɔ bah</u>	Kymo	55.
<u>etzæ ham.</u>		

7 - s is voiced before z and is transcribed z, eg.

J.

P.I.

naas zaajriin np:zzæ:jri:n

8 - ʃ is voiced before z and transcribed ʒ, eg.

ma:fi:ʒzæjji (h)

Kymo 30

and q - ~~and q~~ c is voiced before ʃ and transcribed ʒ, eg.

ʒa mmʌʒʒɛ: biɾ.

Past consonantal h and ɣ are voiced when the former follows a voiced, and the latter is preceded by any consonant, eg.

jiɖh c

Kymo 52

jiɖɣab

" 14

A statement of unvoicing, on the other hand, will be as follows :

1 - The feature is of pre-consonantals only,

2 - q is unvoiced before ɸ, t, t, s and ʃ ;
before s it is transcribed ɸ, eg.

qabaɖtœlp:tœ (h)

Kymo 13

qabassœbɣh

ɣaraɖ tɔjji b

ɣaraɖ ʃɛri:f.

3 - ɣ is unvoiced before x and q and is transcribed x and q respectively, eg.

baɬaxxa:liɖ

baɬaqqad^ori:

4 - b, d and ʃ are unvoiced before every voiceless consonant, eg.

mɔdqu:q

kymo 15

ʃabtœr

" 61

5 - ʃ is unvoiced before h, eg.

manvʃha:mɪd

6 - h is unvoiced before h, eg.

jicʰrɔhha:mɪd

7 - z is unvoiced before s and transcribed s, eg.

ʃamas sœ:lim

F O L L O W I N G C O N S O N A

Preceding consonant

g b t f h x d r z s j ʃ ʒ tʃ c ʒ f ɹ c k

g		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
b	⊖		x		x	x			x	x	x		x			*	x	x	
t	⊖					*		-			*	*	*						
f	⊖		x		x	*			x	x	*	*	*			*	x	*	*
h	⊖	-		-			-	-	-				-		-	-			
x	⊖															*		*	
d	⊖		*		x	x			x	x	*	*				x	x	x	
r	⊖																		
z	⊖								*	*	*	*	*						
s	⊖							*		*	*	*	*						
ʃ	⊖							*											
ʒ	⊖							*											
ʒ	⊖							*											
ʒ	⊖							*											
ʒ	⊖		x		x	x		*	*	x	*		x			x	x	x	
t	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																		
ʒ	⊖																	</	

* = Difference between phonetic and phonological symbols is to be found.

x = Unvoicing of the preceding consonant.

- = Voicing of the preceding consonant.

⊖ = Voicing of the following consonant.

TENSITY AND LAXITY.

Tensity and laxity of articulation can be examined through more than one technique. First, tense and lax articulation can be perceived and their manner of pronunciation imitated and ~~t~~ repeated by the student. Second, palatography is an instrumental technique through which such prosodic feature can be studied. This can be carried out by comparing the wipe-offs of one and the same consonant in different positions and in different examples, and by comparing this consonant with others comparable in the same position, such as its correlatives (eg. t and d). ~~The area of the wipe-off in the palatogram and the closeness of the area of the~~ wipe-off in the palatogram and the closeness of contact of the tongue during the articulation of the consonant in a word or sentence-palatogram are the two relative criteria that have been used in the investigation of tense and lax articulations. Again, kymography is another instrumental technique for use in such study. It may be stated that tensity is not only a muscular tension but also an increase in the pressure of the air from the lungs in articulation. It may also be submitted that, in kymography, this air agitates the style and sends in a great or small excursion from rest or zero agitation.

It is the extent of this excursion which is measured in investigating tensity and laxity in experimental phonetics.

What concerns us here, however, is the systematization of tensity and laxity and relating this prosody to other features in the system.

Eight positions of the consonant are possible in the spoken group of A.D. These are :

- 1 - initial in the S.G.
- 2 - intervocalic
- 3 - pre-consonantal medial in S.G.
- 4 - post-consonantal.
- 5 - double medial in S.G.
- 6 - penultimate in S.G., i.e. in final CVCC
- 7 - single final in S.G.
- 8 - double final in the spoken group.

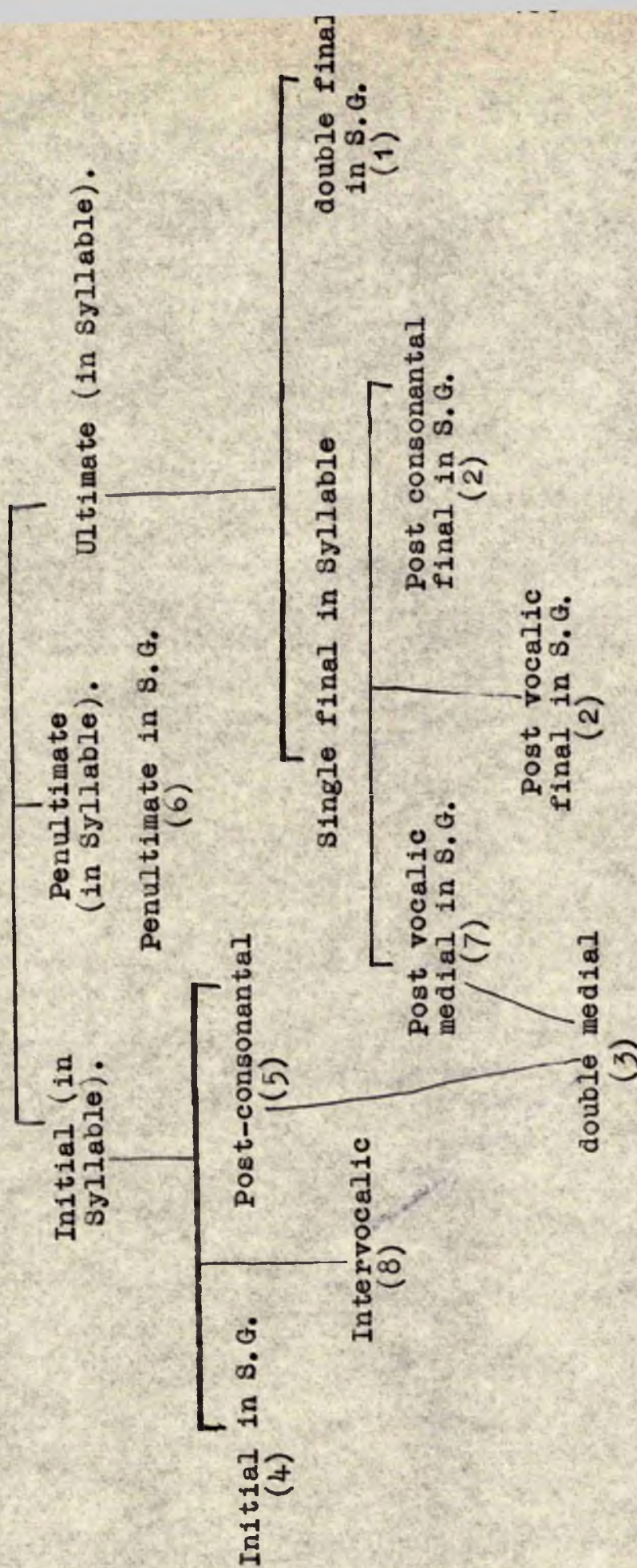
The prosody of tensity and laxity is a function of these positions, not of the individual consonants. These eight positions can be graded and ordered according to this prosodic feature. The tensest position is double final and the laxest is intervocalic; the order is as follows :-

- | | | |
|-------------------|---------------|---------------------|
| 1 - double final | (tensest) | eg. <u>hadd</u> |
| 2 - single final | (laxer) | eg. <u>qa:l</u> |
| 3 - double medial | (laxer still) | eg. <u>ʃaddæ b.</u> |

- | | | | | |
|---|--------------------------|-----------------|-----|-----------------|
| 4 | - initial | (laxer than 3) | eg. | examples above |
| 5 | - post -
consonantal | (laxer than 4) | eg. | <u>qabda h,</u> |
| 6 | - penultimate
in S.G. | (laxer than 5) | eg. | <u>ʔabd</u> |
| 7 | - per -
consonantal | (laxer than 6) | eg. | <u>ʔabduh</u> |
| 8 | - intervocalic | (laxest) | eg. | <u>ʔabad.</u> |

This can be illustrated with respect to the position in the syllable as in the table on the following page :

POSITION IN THE SYLLABLE



If, for example, the palatograms of 't' are taken and compared, it will be found that :

(hatt - xabat - ʔatʔab - ʔa:b - ʔaxʔa:h - ʔatma:ʔ - ʔatʔab) can be put in this order from tense to lax according to the size of the wipe-off. In 'hatt', the wipe-off covers the dental, denti-alveolar, alveolar and half the post-alveolar zones. In 'xabat', it reaches from the dental zone to the canine line, a little less than in the first example. In 'ʔatʔab', the canine line cuts across a slight unwiped tip advancing to the alveolar zone. In 'ʔa:b', this advancing unwiped tip goes a little further in the alveolar zone. In 'ʔaxʔa:h', the wipe-off does not extend to post alveolar as in the previous examples. In 'ʔatma:ʔ', half the alveolar zone is unwiped, and two patches of chalk can be seen in the area wiped off. But in 'ʔatʔab', the unwiped area extends forward to the lateral incisor line and the number as well as the area of patches increase. Similar comparisons can be made with other consonants and with the same consonant in junction with other vowels.

Kymographic evidence parallel to this can be found in kymograms Nos.

- 1 - jɪqɪt, where pre-consonantal 'q' is frictive in articulation,
- 2 - ʔactər, where pre-consonantal 'c' has a very weak plosion,
- 13 - qabaqtə lɔ:tə(h), where intervocalic 'b' has a very negligible excursion.

17 - xaqa ʔ^h

, where intervocalic 'q' is a
fricative articulation.

The three techniques, perception, palatography
and kymography are complementary in investigating this
feature and the results emerging from all three are
in accord.

GLOTTALIZATION

(Symbol : ʔ).

As a prosodic feature, glottalization is not only tied up with position, but also with specific units (syllabic and consonantal). These are :

- 1 - the voiceless denti-alveolar emphatic plosive ' t̚ ' .
- 2 - the voiced pharyngeal fricative, ' ʕ ' ,
- 3 - the voiced alveolar rolled, ' r ' ,
- 4 - the open syllable at the end of the spoken group, whether this syllable is short CV or medium CVV.

A detailed account of this feature follows.

Glottalization of t̚ .

A simultaneous closure of the glottis with the articulation of ' t̚ ' is a feature of this consonant in every position except when it is ⁱⁿ a junction with a following 'h' or 'f', as can be seen in comparing the following kymograms :

Kymo. 3. jɪt̚^h fɪ:

in which t̚ is aspirated

" 4. ʔat̚t̚ al

in which t̚ is glottalized.

Such glottalization is not taken from the kymogram, but deducted by perception. From

the kymogram, only the absence of aspiration can be abstracted.

Kymo. 8 maqʔa:ʕ

where there is no aspiration and this ʔ is also glottalized according to perception

" 20 haʔab

where ʔ is similarly glottalized.

In the X - Ray picture of the 'ʔ' posture (appendix p.91) the closure of the glottis cannot be ascertained, but a comment on this picture by Dr. Joseph is to be found in a footnote (p.275).

Glottalization in ' ʕ ' .

In ' ʕ ', glottalization is not always a simultaneous closure. Glottalized ' ʕ ' can be

- 1 - initial in the spoken group,
- 2 - double medial
- 3 - single or double final in S.G.

In intial ' ʕ ' , in the spoken group, glottalization is a preceding closure, which is released with a ' ʕ ' , affrication, eg.

Kymo No.	2	-	<u>ʕaqqə.h</u>
" "	4	-	<u>ʕattal</u>
"	50	-	<u>ʕazi:z</u>
"	64	-	<u>ʕafw.</u>

In double medial 'ɛɛ', the closure is simultaneous, eg.

baɛɛad.

səɛɛar.

But in final position in the spoken group, this glottalization is subsequent to the starting point of 'ɛ' articulation, eg.

Kymo	No.	8	-	<u>maqtu:ɛ</u>
"	"	17	-	<u>xəqəɛ</u>
"	"	36	-	<u>jivzəɛ</u>
"	"	42	-	<u>jifʒəɛ</u>

In these kymograms the following points must be noticed :

1 - Lack of duration of final 'ɛ' as compared with other consonants in final position, eg.

cf. Kymo 7 - cətəb (i.e. duration of b).

2 - Such lack of duration is coupled with lack of excursion, i.e. the line of tracings is at zero agitation, which suggests complete absence of air pressure.

Glottalization in 'r'.

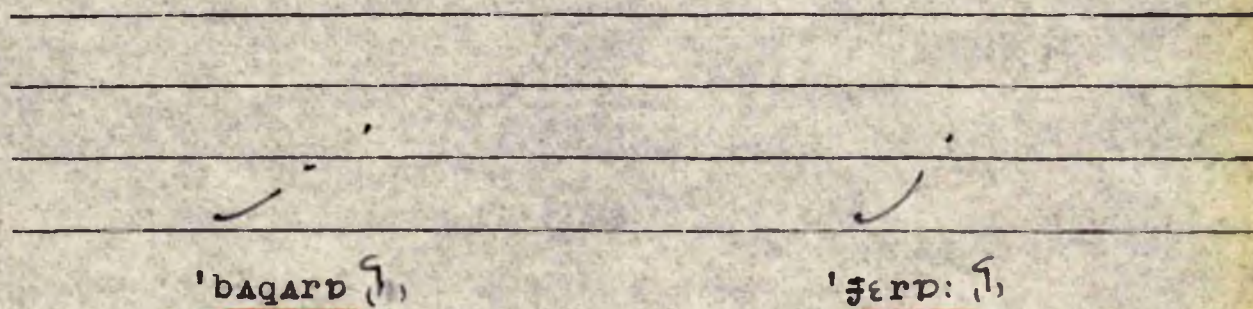
Here glottalization precedes initial 'r' in the spoken group, as can be seen in kymo 63. rəmʒ, where

before the tracings of 'r' a certain displacement of the style is noticed, which suggests a glottal ^{release} position.

Glottalization of the open syllable.

Glottalization of the open syllable final in the spoken group is subsequent to the pronunciation of the syllable itself. The CV and CVV syllables are glottalized in that position in two contexts as follows :

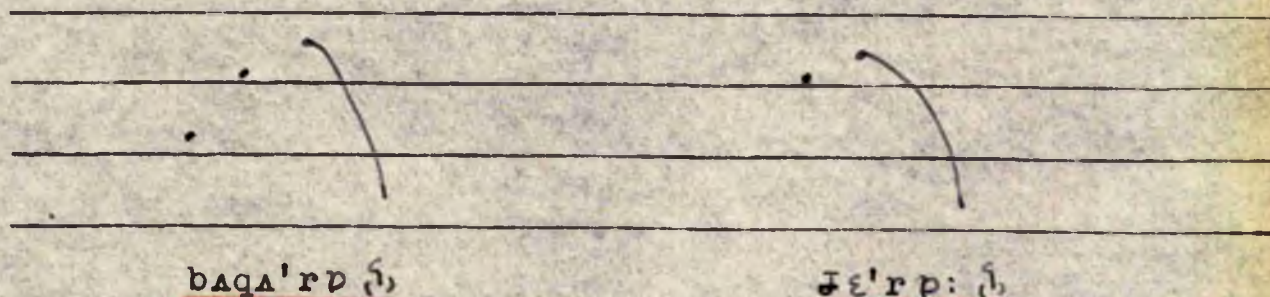
- 1 - when the spoken group is pronounced on a rising tone, eg.



'baqarɔ ɔ̌

'ʒɛrɔ: ɔ̌

- 2 - When this syllable receives the stress in emphasis, even though it is spoken on a falling tone, eg.



baqa'rɔ ɔ̌

ʒɛ'rɔ: ɔ̌

This prosodic feature is significant as far as it is :

- a) a position marker,
- b) characteristic of A.D. pronunciation.

The absence of glottalization in the above contexts will not affect the intelligibility of the utterance, but will show a pronunciation not characteristic of Aden Dialect.

ASPIRATION

(Symbol (h)).

Aspiration is a whispered pulmonary air stream following the pronunciation of a consonant or a syllable. This prosodic feature is a function either of a voiceless consonant or of an open syllable, each being in a specific context in the spoken group.

In A.D., there are three consonants and two syllables which are connected with this feature. The three consonants are the voiceless 'p', 'c' and 't', and the two syllables are the open 'CV' and 'CVV'. These are to be treated as follows :

' t '

In pre-vocalic position, 't' is always aspirated. This can be seen in kymograms, such as :

No. 6 - rac^ht^hæ r

No. 7 - c^hæt^hæ b,

No. 10 - sæ ræqc^hit^hæ :b

No. 13 - qæbæqt^hæ lp:t^hæ (h)

But when the vowel following 't' is close (back or front) the aspiration is even stronger, as can be seen in kymogram

No.27 - jit^hu:

In pre-consonantal position, however, 't' is aspirated only in specific junctions: which are,

(1) when it is followed by an anaptyctic vowel

eg. t^{hə}r, t^{hə}l and t^{hə}n) and

(2) in the junctions: t^hn, t^hx, t^hq, t^hf and t^hc, eg.

Kymo. No. 80 - mat^{hə}ru:c^h

jit^{hə}ni:

et^hqɑ:tə l

jit^{hə}li:

ʃat^hfah

et^hhabas

et^hcəlləm

et^hxa:sam

Final in the spoken group, both aspiration and the plosion itself are slight, eg.

fa:t^h

ma:t^h

qa:t^h

' C '

This consonant also is aspirated in the pre-vocalic position as can be seen in :

Kymo. No. 5 ʃac^hɛl.

7 c^het^hæb

When it is followed by a close vowel (whether back or front), 'C' is even more strongly aspirated as can be seen in comparing the above examples with

Kymo. No. 10 - særaqc^hit^hæ:h.
 22 - maic^hü: f
 23 - ʔabc^hi:

But in the pre-consonantal position, this consonant is aspirated only in specific junctions; these are :

(1) when followed by an anaptyctic vowel (i.e.

the junctions c^her, c^hel, and c^hen), eg.

Kymo. No. 58 - ʔac^herph
ʔac^hel
ru^hem^hh.

(2) in the junctions c^ht, c^hn, c^hd and c^hf, eg.

jic^hth^hb
jic^hdib
jic^hfii:

The aspiration of this consonant, as final in the spoken group, is (like its plosion), slight, eg.

Kymo. No. 52 - jɪd^hac^h
 80 - mat^hru:c^h

The difference between the positions of aspirated 't' and 'c' is pre-consonantal; i.e. consonants before which 't' is aspirated are not similar to those that follow the

the 'c' aspiration due to difference between 't' and 'c' in the functions of the prosody of zero plosion as well as the articulatory difference (see table p. ^{fol.}164).

' t '

The 't' consonant is aspirated only in the two junctions t^hn and t^hf; otherwise, it is glottalized (see glottalization, eg.

Kymo No. 3 - jit^hfi:,
jit^hhan

'CV and CVV'

In final position in the spoken group, these two syllables are aspirated when spoken on a non-emphatic falling tone and when the vowel unit of CVV is 'fatha', eg.

Kymo No. 2 - ʔadqa,h,
13 - qabadt^hælp:t^hæ,h,
21 - ʔafa:(h)

The aspiration of the open syllable is perceptible and correlated in a kymogram ^{with} by a much smaller displacement of the style than that of consonantal 'h' final in the spoken group, as can be seen by comparing the above examples with :

Kymo No. 58 - ʔac^h rph .

W. N. Y. prosody .

In classifying the consonants (p.111) it has been stated that those of A.D. (listed on p.110) can be divided into seven prosodic groups. The detailed account of this prosodic feature will be prefaced by the following observations :

- 1 - In classifying the consonantal units (see table p.113), it has been stated that there are ten articulatory types in A.D.; bilabial, labio dental, denti-alveolar, alveolar, palatal, velar, uvular, pharyngeal and glottal.
- 2 - For the classification of this prosodic feature, these types of articulation can be further placed¹ in five prosodic categories of articulation, within some of which two groups are opposed.
- 3 - These prosodic categories of articulation are :
Category a) dental, which can be applied to both the articulatory types; dental and denti - alveolar.
" b) Palatal, which covers articulations in the hard and in the soft palates alike, thus including the three types of articulation : palatal, velar and uvular.

(1) on following page.

Category c) labial, covering the two types labial and labio-dental,

" d) infra-buccal, covering pharyngeal and glottal types,

" e) alveolar which as a category is with the same application as that of the 'type' 'alveolar.

4 - The dental and palatal categories are bi-prosodical in character, i.e. each of these categories is subdivided, according to prosody, into 'back' (including emphatic) or 'W' and 'front' or 'Y' prosodies. The other three categories are monopro-sodical and are included under the term 'neutral' or 'N', which has a negative denotation, in a sense, because it implies "neither 'W' nor 'Y'". Each of these latter is not subdivided, but is prosodically different from the other two, even though all the three are included under 'N'.

It will be remembered that the groups are :

Group	1	-	p, t, d	}	
"	2	-	x, ɣ, q	}	W.
"	3	-	b, m, w, f,	}	
"	4	-	ɸ, h, ɦ, ɕ,	}	N.
"	5	-	r, l, n,	}	
"	6	-	t, d, s, z,	}	
"	7	-	c, ʃ, ʒ, ʒ,	}	Y.

(1) Notice the difference in use between 'type of articulation' applied to consonantal units and 'category of articulation' applied in studying this prosodic feature and is more general in application.

Tabulated as articulatory categories, these appear as follows :

Groups	A R T I C U L A T O R Y C A T E G O R I E S.					
	Dental		Palatal		Labial	Infra buccal
	Back.	Front.	Back.	Front.		
Grp. 1 (emph).	s, q,					
	t,					
Grp. 2 (back)			x, ʃ			
			q,			
Grp. 3 N.					b, m, w, f,	
Grp. 4 N.						ɣ, h, h, ɛ
Grp. 5 (N.)						r, l, n.
Grp. 6 (Front)		t, d, s, z,				
Grp. 7 (Front)				c, ʃ, ʃ, j,		

In discussing the functions of prosodies, it is submitted that the W.N.Y. prosody is differential (for example *ʃ* and *s*) in function. Attention is also drawn here to the dental and palatal categories in the above table

in which front dentals are opposed to back dentals en bloc and likewise front palatals to back palatals. The general patterning of this prosody recognizes the groups and not the consonants, as its units. This prosody, with the seven groups as its units, is a self-contained system functioning in both the consonant and the syllable. ~~(as seen on p.)~~. The relation between groups 1 and 6 on the one hand and groups 2 and 7 on the other is that of prosodical opposition expressed by 'W' and 'Y' respectively.

It has been stated above that this prosody functions in the syllable. It may be added here that W.N.Y. cuts across every vowel-unit, since, in its grouping arrangement, it coincides with phonetic resonance in one-to-one relation, thus dividing every unit into seven prosodical variants (which may be long or short) parallel to the seven vowel qualities of each (of each degree of length) unit, which are studied in the phonetic section of this thesis (pp.364-396).¹ The occurrence of one or the other of these seven variants of the same unit is a function of the syllable in which it occurs, i.e. of the consonantal framework of the syllable as well as on the structure of the syllable and the word. The above grouping

1. See, for example, the 'front class vowels' pp.375-8 a phonetic term equivalent to phonological 'casra'.

of consonantal units is built on the prosodical patterning of the syllables. Some syllables may be described as 'back', others as 'neutral' and some as 'front'; and the groups above are ordered according to their distribution in relation to these three syllabic prosodies. Such difference in prosody between one syllable and another can be examined both systagmatically in the sequence and paradigmatically through commutation.

To define the back, the neutral and the front syllables, it is necessary to point out two main structural divisions of the syllable; closed and open. Each of these divisions merits a special treatment.

1 - The closed syllable :

This syllable is :-

a) back: when its initial or ultimate consonant is an emphatic of group 1 or 2 (see table p.200)
eg. ʔallaq - balaʔ - waʔad ʔaahbu

b) neutral: when both the initial and the ultimate consonants in the syllable are of the neutral groups 3, 4 and 5, eg.

ʔabar - farah - ban .

c) front: when one of its consonant is of group 6 and 7, and it contains no consonant of groups 1 and 2, eg.

ʔadad - ʔabad - rabaʔ

2 - The open syllable :

This is :

- a) back : when this or the following syllables open with a consonant of groups 1 or 2, eg.

<u>ṭ</u> alab ,	:	ṣalab,
<u>b</u> aṭal ,	:	naqal,
<u>s</u> aṭaṭ ,	:	saqaṭaqaṭ,

- b) neutral : when both this and the following syllables open with a consonant of groups 3, 4, or 5, eg.

<u>b</u> aṭad,	:	ṣabad.
----------------	---	--------

- c) front: when this syllable opens in a consonant of group 6 or 7, and the following opens in any consonant except one of groups 1 and 2 and except when the following syllable ends in a consonant of group 1, eg.

<u>ṣ</u> abal	:	ṣarah
<u>s</u> abaḥ	:	ṭabaṭ
<u>ṣ</u> abar	:	<u>c</u> abas

Q U A N T I T Y .

Under this heading the quantity of syllables and the length of consonants and vowels will be dealt with. Quantity and length are two phonological categories in any given language, but 'duration' (a phonetic term) is measured by mechanical means and is perceived in 'time' and can be abstracted from 'space', i.e. from kymographic tracings. Different quantities and different lengths in a given system are relative, but in duration, time is a factor, since duration is measured in centiseconds. Furthermore, what is considered longer in the system might not be so in the utterance when measured. This clarifies the difference between the two terms.

It has been seen, in studying the A.D. syllabic system, that there are three degrees of syllabic quantity in the dialect, long, medium and short. A syllable, however, is not defined merely as long, medium or short, because under each of these three terms there is more than one syllable. Taking 'C' to mean a consonantal unit and 'V' as a vowel unit, six possible structural forms can be established :

Short.	Medium.	Long.
VC	CVC	CVVC
CV	CVV	CVCC

A definition of any syllable will make use of both the description of quantity as well as the form of structure. This renders necessary the use of the following definitions :

- 1 - 'Short VC',
- 2 - 'Short CV',
- 3 - 'Medium CVC',
- 4 - 'Medium CVV',
- 5 - 'Long CVVC'
- 6 - 'Long CVCC'

These syllables are systematic, that is, phonological; on the other hand, phonological 'VC' is a systematization of ' (1)VC', sometimes of 'VC' or even of 'C' other times as found in actual utterance, eg.

(1)estʌqʌ:m - estʌqʌ:m - stʌqʌ:m¹

Similarly, phonological CVCC syllable is a systematic statement of instances that can be symbolized

	CVCC	eg.	<u>cɛsb,</u>
or	CVC ^V C	eg.	<u>ʃʌq^ol,</u>

(see anaptyxis).

Two degrees of vowel length are to be recognised in A.D.; short and long. A long vowel is to be considered double short. In the same way, a consonant can be single (eg. 'b') or double (eg. 'bb'). The prosody of length is

1. See ~~phonological~~ and phonetic syllables, p. 33

found in all vowel units of A.D., but the prosody of shortness is found only in three out of a total number of five vowel-units. This is illustrated by the following table :

Prosody	casra.	xafqa.	fatha.	rafʿa.	qamma.
Length	ii	ee	aa	oo	uu
Shortness	i	--	a	--	u

As has already been stated, a systematically long vowel might also be so in utterance, i.e. in duration. In studying durations, it is found that some vowels classified as ^{short} in the system have greater duration than others classified as long. This is not the rule, however; there is some degree of parallelism between systematic length and phonetic duration. Expressed by syllabic context, the vowel duration in A.D. appears in the following descending order :

- 1 - Stressed CVVC eg. 'qɑ:l
- 2 - " CVV eg. 'qɑ:ʃil
- 3 - Unstressed CVVC eg. mu:ʃ'wɑ:ʃi:
- 4 - " CVV eg. qɑ:'rib hum
- 5 - Stressed CV eg. 'dɑrɒb
- 6 - Unstressed CV eg. dɑ'rɒb hum
- 7 - Stressed CVCC eg. 'ʒabd

- | | |
|---------------------------|-------------------------------|
| 8 - Unstressed CVC | eg. <u>ʒab'dʒ:n</u> |
| 9 - Stressed CVC | eg. <u>ʒabduh</u> |
| 10 - The anaptyctic vowel | eg. <u>ʒaʃ^olph</u> |
| 11 - TheVC vowel | eg. <u>esta'qa:m</u> |

Two degrees of length are also to be recognised in the consonant system of A.D. single and double. A double consonant, as the term indicates, is two consonants in junction which are systematically similar, eg. 'tt', 'qq', 'ʒʒ', 'bb', etc. An homorganic or homotypical articulation which brings about an impression acoustically similar to that of doubling (eg. td = dd) or (ʒq = qq) should not be called a double consonant on point of systematic differences between the two units in succession.

Again, a variant of double consonants is occasionally found with the same or even less duration than a single consonant. Namely, when initial or medial CVCC in the spoken group ends in a double consonant and is immediately followed by a consonant that is initial in a following syllable. Even to the ear, this double consonant is not longer than a single one, and the double nature of this consonant can only be established on isolating the word in which it is final, eg.

hadd : hadd qallɔc perceived as had qall c
ʃɛmm : ʃɛmmɔpfasɔ,h " ʃɛmmɔpfasɔ,h
ʃɛdd : ʃɛdd ne:fu,h " ʃɛdde:fu,h

Single consonants, moreover, vary in duration according to position, and the variation here is parallel to that found in studying the prosody of tensity and laxity, i.e. double consonants in final position in S.G. are longest in duration while the intervocalic consonant is shortest, and the order is as follows :

- 1 - double final, longest in duration,
- 2 - single final, less "
- 3 - double medial, still less "
- 4 - initial, less than 3,
- 5 - post-consonantal, less than 4,
- 6 - penultimate in S.G., less than 5,
- 7 - pre-consonantal, less than 6,
- 8 - intervocalic shortest in duration.

Thus, a single final consonant (i.e. systematically short) is longer in duration than double medial (i.e. systematically long).

P R O M I N E N C E .

Prominence may be regarded as the relative outstanding of a sound or a syllable as compared with its neighbouring sounds or syllables, due to one or more factors of quantity stress and intonation. Stress is not prominence; it is a factor of prominence; other factors are to be found in the definition above. Stress, nevertheless, is often taken as chief among these factors. This may be because prominence can be identified with stress more often than with any other feature, or because stress, having either tonal or a tensivity character, has a wider area of application to prominence than any other factor has. Sweet¹ uses the term 'force' to explain 'stress' and states: 'Force, like quantity, belongs essentially to synthesis, for it is always relative, always implying comparison either of two different groups of sounds or of two different portions of the same group. Physically it is synonymous with the effort by which the breath is expelled from the lungs. Every impulse of force is therefore attended by a distinct muscular sensation. Acoustically it produces the effect known as loudness which is dependent on the

1. A Primer of Phonetics, Oxford, at the Clarendon Press, 1902, p.47.

size of the vibration waves which produce the sensation of sound.'

Sweet's use of the term 'synthesis' is in the ^{sense} of 'syntagmatic composition' and 'belongs' essentially to synthesis' will be understood as 'prosodic'.

Words are syntagmatic compositions and have their own stress system which is independent of the stress system of larger sequences. In A.D. word-stress system, stress is a function of the morphological typical form (see pp. 50 - 57), eg. 'faaʕil' or 'mafʕuul', rather than the individual instances of the following, eg: 'qaarib' and 'maḍruub', 'qaatil' and 'maqtuul' and 'ʕaalim' and 'maʕluum'. To illustrate this, three groups of words are given below; each group is headed by its morphological typical form. It will be found that within each group, the placement of stress is uniform :

<u>'faʕal</u>	<u>'faaʕil</u>	<u>maf'ʕuul</u>
'qatal	'qaatil	maq'tuul
'ḥabas	'ḥaabis	maḥ'buus
'naqal	'naaqil	man'quul
'rabaʔ	'raabiʔ	mar'buuʔ
'ʕazal	'ʕaazil	maʕ'zuul
'ʕaʕal	'ʕaʕil	maʕ'ʕuul
'qarab	'qaarib	maq'ruub
'ʕazam	'ʕaazim	maʕ'zuum
'xazan	'xaazin	max'zuun

'ṣaraf

'ṣaarif

maṣ'ruuf

ṣacar

'ṣaacir

maṣ'cuur

This stress can be described as morphologically typical; it is placed on the initial syllable in the 'fa₁al' and in the 'faa₂il' types, but in the 'maṣ'ṣuul' it is placed on the final syllable; In longer sequences, however, another type of stress arrangement can be worked out, which does not conform strictly to morphological structure. Such a type of stress is a function of the context of situation as a whole, (including, of course, the verbal context). So two types of stress are found in the dialect :

- a) morphological stress,
- b) group stress.

a) Morphological Stress :

This kind falls into two main divisions, according to the tensivity of articulation and the degree of force. These two divisions are : 1 - primary stress, and 2 - secondary stress. Primary stress is so-called for two reasons; first, it is stronger, and in this sense, the use of the term 'primary' necessitates that of 'secondary'. Second: the placing of the weaker type 'secondary' is measured by from the syllable of the primary stress. The space between primary and secondary thus regulated will allow, in the general arrangement of stress in the spoken

group, a rhythmic balance or a rhythmic pattern as will be seen later. The principles underlying this morphological stress are as follows :

Primary Stress :

The syllable primarily stressed is :

- (a) the ultimate in the word if the syllable is long CVVC or CVCC, eg.

'qaal,	qall,
esta'qaal,	esta'qall
ehbi'suuh	ji ʒi:'bacʃ

- (b) medium CVC or CVV if it is preceded only by VC syllable as initial in the word, eg.

er'cab	er'mii,
es'maʒ	es'qii
es'cut	es'ruu

- (2) the penultimate in the word, if it is :

- (a) medium CVC or CVV, not preceded by a long syllable, eg.

'ʒallam	'qaatal
'sallam	'qaadii
'ʒabdac	'ʒaaci
es'tahram	ʒa'waarii
mustah'milhum	ʒa'waabac

- (b) short CV, initial in the word, or preceded by a prefix, eg.

'catab,	et'catab,
'habas,	eh'tabas,
'haram,	muh'taram,

- (3) the antipenultimate syllable in the word when the penultimate and the ultimate are in one of the following forms :

a) CV + CVC,	eg.	'callamac haasabac
b) CV + CVV,	eg.	'callamuu 'haasabuu
c) CV + CV,	eg.	'qarabuu 'baqara 'masxara 'maqbara

No fourth syllable from the end is stressed. It can be seen from the statement above that the stressed ultimate can either be long or medium and the stressed penultimate can either be medium or short. Similarly the antipenultimate syllable; but this is invariably stressed in a word where the penultimate is short and the ultimate is not long (see the antipenultimate above).

Secondary Stress:

In the word, the scope for secondary stress is narrower than in a longer sequence. This stress, is,

nevertheless, found in two syllables or more. The syllable secondarily stressed is found in defined spaces from the primary stress as follows :

Secondary stress is placed on :

- (1) the pre-accentuated syllable, when it is long, eg.

,ħaas'buuh,

,ṣaaħ'been

- (2) the syllable preceding the pre-accentuated, when the two together form one of the following sequences :

- a) medium + medium (CVC or CVV), eg.

,ʕallam'naah

,ṣaaħab'tuuh

,ṣaaħab'tacʃ

,ṣaaħab'tuuhum

,ʕallam'tuuhum

- b) medium + short, eg.

,musta'qiim

,musta'ʕiḍda

,ṣaaħa'buuhum

,calla'macʃ

- c) the third syllable from the accentuated when the three pre-accentuated together form the sequence: medium + short + medium, eg.

,mustaħim'miin,

,mustafii'diin,

,callamat'naaʃ

,ħasabat'ħumʃ .

No secondary stress is found on the fourth syllable from the accentuated syllable in the word.

b) Group Stress:

Group stress is independent of morphological stress, though it often coincides with it. The difference between the two types is that, unlike morphological stress, group stress can be described as emphatic or ordinary. The difference between the emphatic and the ordinary group stress can be summarized in two points :

- 1 - Emphatic stress has a stronger force.
- 2 - It also requires a relatively louder pitch.

Any syllabic form final in the word, medial or final in the spoken group is liable to this type of stress, even the CV structure. This constitutes a major difference between group stress and morphological stress; in this latter, as has been seen, no final 'CV' in the word can be stressed. The space between each two stresses (whether both primary, secondary or different) in this group stress does not exceed four syllables, eg. tu'quul illaa ma'riid'sill. This space is mainly in accordance with the rhythmic patterning in the spoken group, as will be seen below. In the sequence of group stresses, it is not necessary to have secondary and primary

in alternative occurrence (i.e. see-prim-sec-prim and so on), two secondaries or primaries may be found in immediate succession. Filling the space between the two stresses may be in one of the following forms :

- | | |
|--------------------|---------------------------------------|
| a) long, | eg. ceef 'haalac ?
'ʕeef 'haadaa ? |
| b) long + medium, | eg. ,ceef tiʕ'milhum ? |
| c) long + short, | eg. ,ceef ʕa'raftuu ? |
| d) 3 mediums, | eg. 'juxruʃ min'beetu ? |
| e) 2 mediums, | eg. ,mustaħ'milhum |
| f) medium + short, | eg. ,musta'qiim |
| g) 3 shorts, | eg. ,baqara'teen |
| h) short + medium, | eg. ,catab'tuuh |

Two shorts or one medium are not long enough to form such a space, and two longs are not found without stress.

The phrase 'rhythmic pattern' has been alluded to without explanatory example. Such examples of spoken groups with the stress marked on them are given here. Attention is drawn to the approximate equidistances between stress, which is what rhythm implies. (Source: Luqman's records : 1 and 2).

- (1) əl 'hamdu lil'laah ʕalaa 'culli 'haal.
- (2) 'ʕanab 'xeeru 'ʕaaf ja
- (3) 'cattar 'xeerac ʕabdəl'laah

- (4) 'ɕindu ɔl'ladii jic'fiihumin'taɕab ɔd'dunjaa
- (5) tuquul jaa xi llaa ja'huudii'maat
- (6) 'mitl ɔs 'seel ɔl 'waarid
- (7) 'ɕalab 'lanaa 'qahwa 'murr mu'hawwaɕ
- (8) ta'ɕaal jaa ra'¹ʃaḥ mitl ɔl'maɕar
- (9) 'laacin maa da'reenaa ɕillaa ,waḥmad 'saaliḥ,
wal 'haaɕ muɕ'ɕafaa ɕabd ɔl'laa j'ɕubbuu ɕa'leenaa
'ɕafla.
- (10) ɕa'ɕan ɔq'diiq wel 'curab weq'daɕar
- (11) webn² 'ɕaadamjaa ɕabdɔl ɕa'ziiz mas'tuur.

1. Notice the stress on CVC ('ʃaḥ) in the word 'raʃaḥ' in a context not favourable for stress in the morphological type of stress according to which the word is 'raʃaḥ as 'matar in the same group.

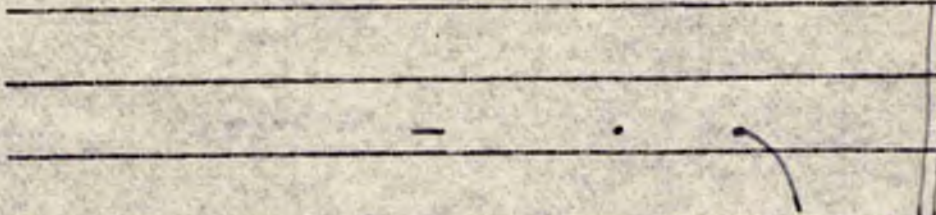
I N T O N A T I O N .

'Intonation may be defined as the variation which takes place in the pitch of the voice in connected speech; i.e. the variations in the pitch of the musical note produced by the vibration of the vocal cords.'¹ In A.D., intonation has a syntactic function which is the formal expression of affirmation as opposed to interrogation. It has no lexical function, since A.D. is not a tone language. It has been stated (p.156) that the phonetic function of intonation is the utterance from which it can be systematized and the semantic function is seen in the variation, not only of pitch, but also of the general arrangement of an intonation pattern from one utterance to the other, according to the difference of context of situation. To illustrate the syntactic function of intonation, let us take, for example, the spoken group :

'mu:f maa'ʒu:d ' ;

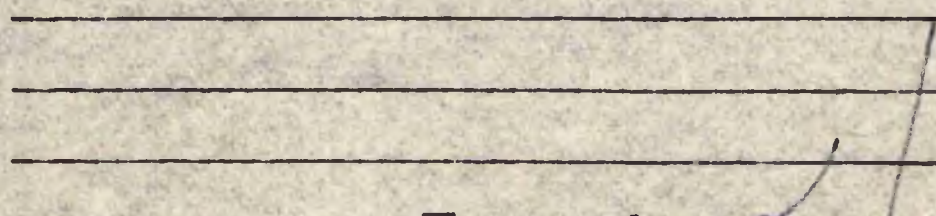
the succession of the component sounds will be kept unchanged, the secondary stress on the first syllable and the primary stress on the last syllable will not be altered; the intonation, however, will be contextually different. This spoken group can be said on a falling tone as well as on a rising tone. The first possibility gives us:

1. D.Jones. Outline of English Phonetics, p.255.



,mü :f maw'fö:d.

while the second, ending in a rising tone, will appear as:



,mü :f maw ' fö: d.

On examination, the difference between the two forms of intonation will be found to be syntactic. Such intonation pattern determines whether the spoken group should be treated as an affirmative or as an interrogative sentence, i.e. intonation is a formal expression of either of the two categories: affirmation and interrogation.

The A.D. intonation can be formally classified from two different points of view :

1 - According to the last up or down movement in the tune¹, the division will be as follows :-

a) falling, or tune 1.

b) rising, or tune 2.

2 - According to the range between the highest and the lowest pitch in a given spoken group, the division

here being trilateral, thus :

- a) active, or range 'a',
- b) relative, or range b ,
- c) passive , or range c ,

The total combinations of these forms will produce six patterns, as follows :

- | | | |
|-------------|------|----------------------|
| 1 - Pattern | 1 a, | or active falling, |
| 2 - " | 2 a, | or active rising, |
| 3 - " | 1 b, | or relative falling, |
| 4 - " | 2 b, | or relative rising, |
| 5 - " | 1 c, | or passive falling, |
| 6 - " | 2 c, | or passive rising. |

In traditional classification, the division is into emphatic and non-emphatic; but emphasis is notional and according to the criterion of form and function, the proper method of dealing with linguistic forms is a formal approach; such approach has been attempted above. Emphasis, as a notion, is not suitable as a basis of division here, since it can be a component of the meaning of patterns 'a' and 'c' (but not of 'b') and being common to both the formal patterns, it is not a section of intonation. Ranges 'a' and 'c' are the widest and the narrowest on the stave respectively. The stave used is of four lines especially devised for this work, and the application of the three ranges to this stave will be seen later.

By 'tone' will be meant the pitch of a single syllable, but the general horizontal arrangement of a given intonation pattern, together with the last tone (falling or rising) will be called 'tune'. The term 'pattern' implies (tune + range). The terms 'active', 'relative' and 'passive', on the other hand, should not be understood in the light of their popular lexical meanings. They are to be treated merely as labels of formal divisions, in the same way as 'a', 'b' and 'c' above.

Under 'a', i.e. 'active range', are included the spoken group delivered, so to speak, with positive emotion or excitement. Defining it on the surer ground of physical phonetics, these spoken groups can be described as having stronger agitation of the vocal cords through greater pulmonary energy and larger air volume. This latter definition is to be preferred because the psychological aspect is beyond the scope of this work (and, perhaps, ^{psychology} is the least beneficent ancillary subject to linguistics). On this stave of four lines, this range covers the whole space between the lowest and the highest lines of the stave which represent the lowest and the highest pitches in relation to the intonation of my informant's speech as follows :

'ŋe: ʃ 'ha: dœ : ʃ, ?

The term 'b', i.e. relative range, covers all cases of medium range. The question of widest, medium and narrowest should be understood within the intonational framework of the dialect, not as absolute width or narrowness, which does not exist in linguistic studies. The relative range appears on the stave as follows :

'ŋe: ʃ 'ha: dœ : ʃ, ?

By the third term 'c', or passive range is meant the narrowest range of pitch in my informant's intonation of the dialect which is related to special contexts as will be seen later. The term passive is not to be taken as a description of the range, but as a label for it. In this as in the 'a' range, (as has been submitted above), emphatic intonation may be found. On the stave, this range is as follows :-

1. For the difference in transcription between "ha:dœ:ʃ," and "ha:dœ: ʃ," see Glottalization and aspiration of the final open syllable.

'le : f 'h a: d æ : (h)

INTONATION PATTERNS :

It has been stated above that by pattern is meant the combination of (tune + range), and that the total number of patterns in the dialect is six, expressed by the symbols :

1a- 1b- 1c- 2a- 2b- 2c .

It should be noted here that the tune termed 'rising' can, in fact, end in an ascending or a high level tone, whatever the range. Similarly, the tune described as 'falling' can end in a descending or a low level tone. The final level tone in the 'rising tune' can either be stressed or unstressed, but in the 'falling tune' it can only be unstressed. Use will be made in the headings of the six intonation patterns of the two figures 1 and 2 as well as of the three letters a, b, and c. Made of these combined, the headings will appear in the following order:

1a - 2a - 1b - 2b - 1c - 2c .

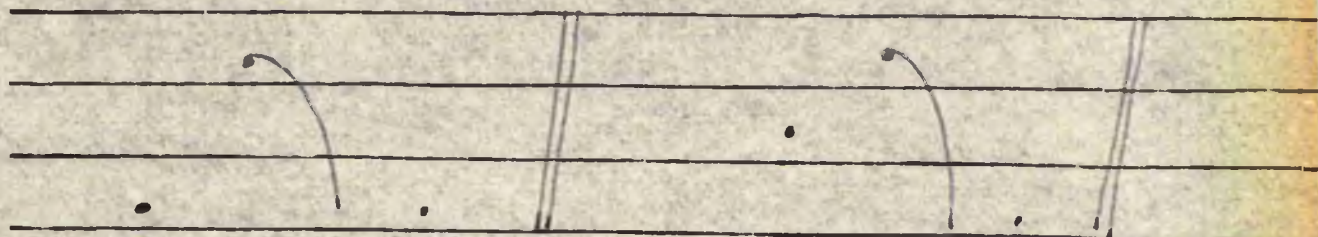
Pattern (1a).

The main characteristic of this pattern is the width of range, considered not only in relation to the highest of its tones in isolation, but in relation to it as a part of the horizontal arrangement as a whole. Another characteristic of this pattern is, as in every falling tune, that the last moving tone is descending. By 'moving tone' is meant that which is not level (whether falling or rising) and which belongs to a stressed syllable. In the description of this pattern, three parts will be dealt with : the beginning, the middle and the end.

The beginning of 1a :

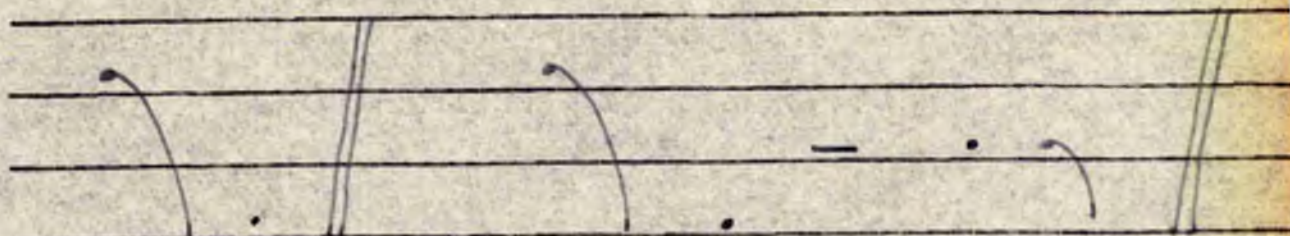
This is either :

- 1 - a level tone whether stressed or unstressed, low or mid as the intonation of "hə: ʃ ha: dæ : ʃ" above can be made if the shade of meaning is accordingly different, and as in the example below :

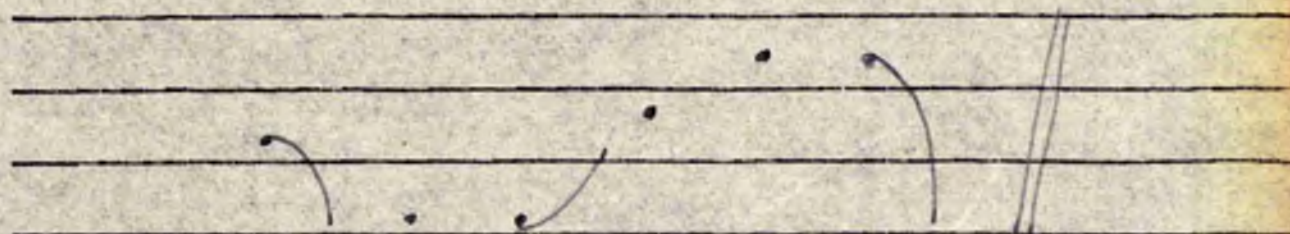


mü: ʃ 'fə: hɜ: m ! or mü: ʃ 'fə: hɜ: m !

- 2 - d : falling stressed tone which can be high or mid, as in the following examples :



'fā:h m. and 'qu: { mā: 'fē: 9 ol'le:h ;

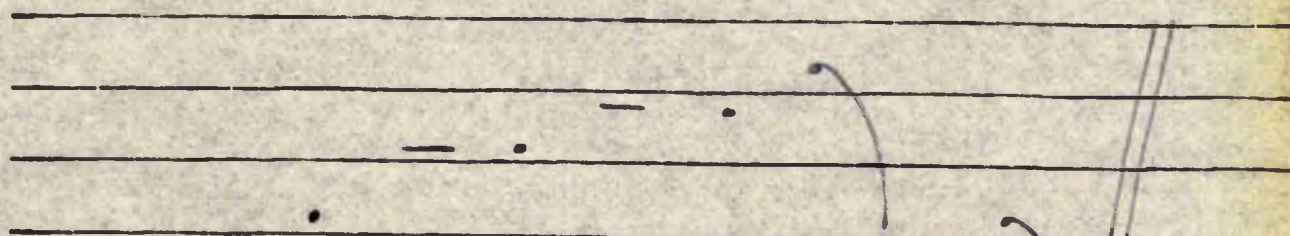


'xallr: 'h a: dæ: fīl 'be:t !

The middle of (1a) :

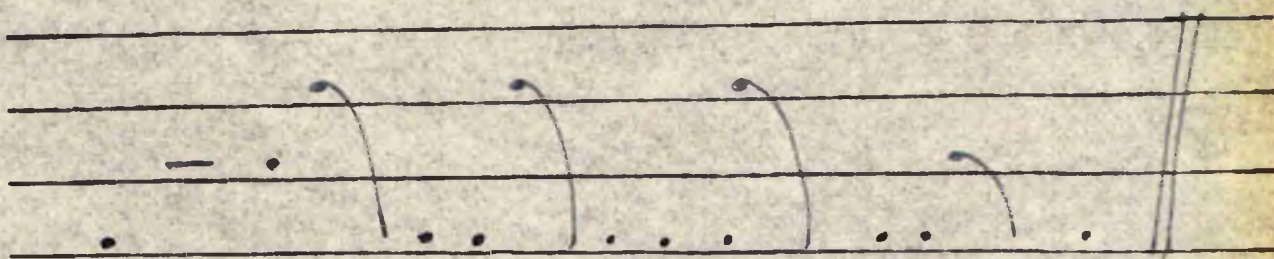
This can be one of the following arrangements :

- 1 - falling gradually by means of a succession of strata of separated or connected level tones each higher or lower than the preceding, as in the following example :



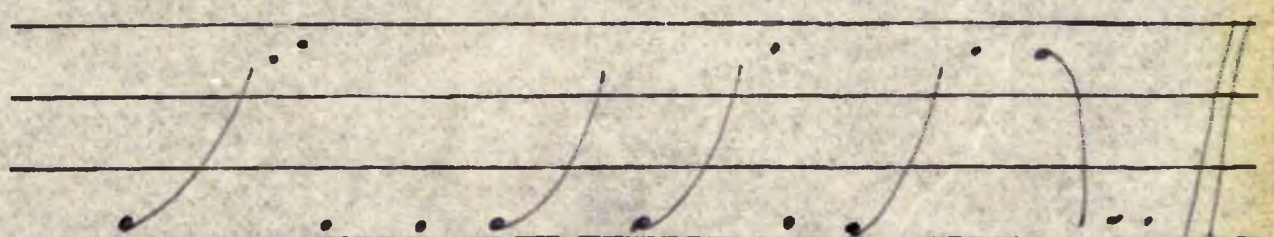
'u 'xallas 'np: lbc 'zī:r 'majj !

- 2 - forming a succession of falling or rising tones all having their starting point at the same level, as follows :



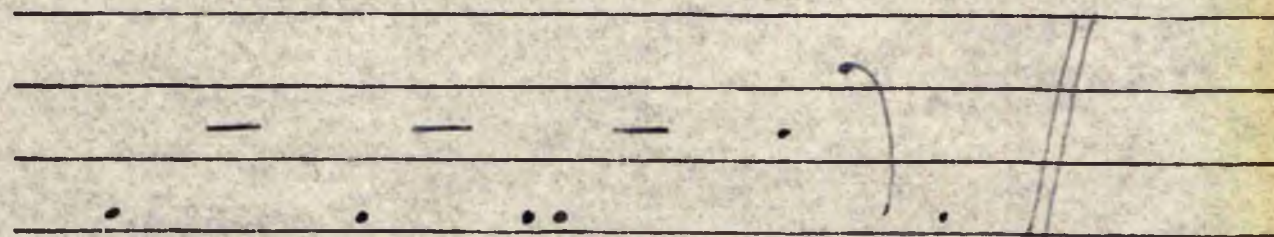
wu gu'net'fadda'üt'fadda'ü: tæ'a:(ü'f'üs:

or



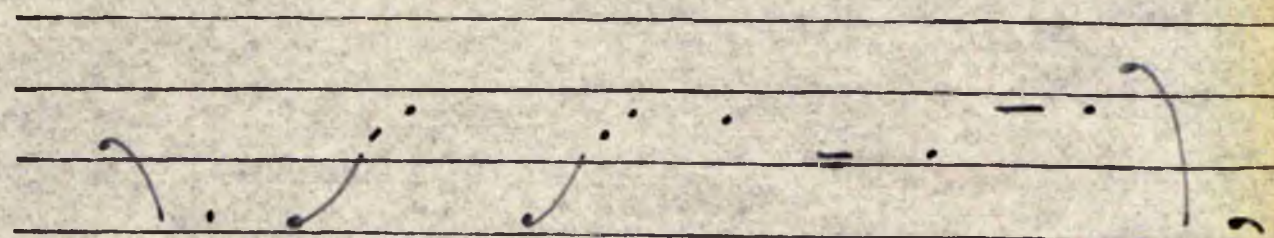
'juxpüf min el 'be:t 'ma:haddji'fö:fü 'qabadæn !

- 3 - zigzagging stressed or unstressed level tones in one order or the other, as follows :



fu 'jo:m el'la:h jil'lpm bi 'ha:lp (1)

- 4 - a combination of two or more of these forms, eg.



ma'f: 'jif'ri: 'jif'ri: l p,hadd el 'beet t'pa:hjibci:

1. Note the stress on final CVC in the word "jil'lpm" which is contrary to the statement on morphological, but not on grp. stress; this fits into a rhythmic pattern.

The end of (1a) :

The last, falling tone of this pattern is either :

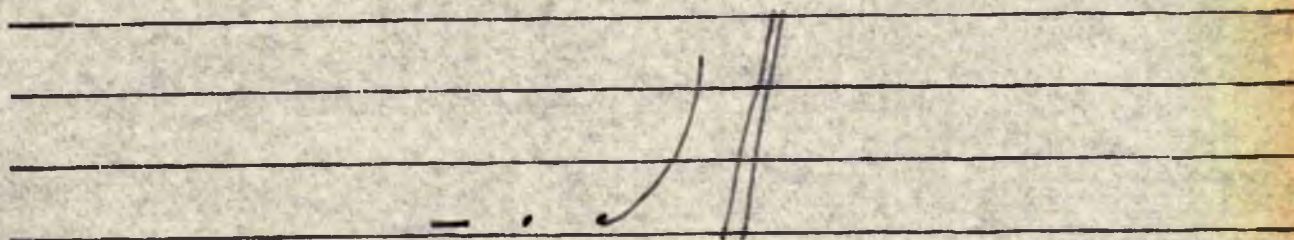
- 1 - the last syllable in the spoken group, or
- 2 - is followed by level tones of stressed or unstressed syllables all lower than the tone in question, as can be seen in the above examples; the main condition is that this pattern must have at least one tone, in the intonation of the spoken group, covering the three spaces on the stave of four lines.

Pattern 2a.

This pattern is of active range and a rising tune. No active rising intonation ends in a stressed level. The general arrangement of this pattern is similar to that of the preceding one (1a), excepting the following points :

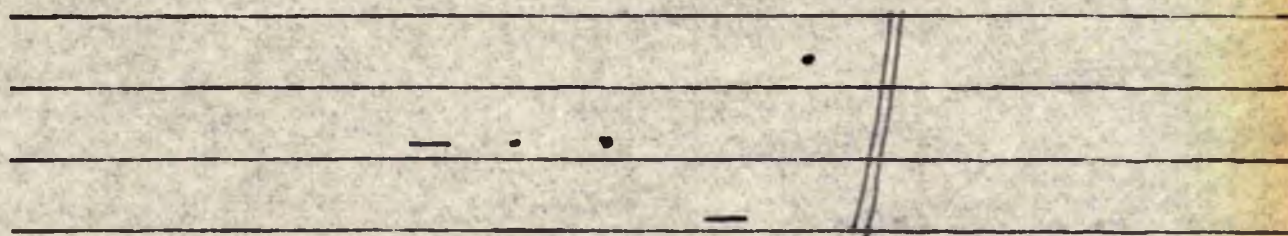
- 1 - the difference between the two patterns is seen only at the end; the beginning and the middle have the same description as above.
- 2 - before the last rising tone, stressed tones (or tone) are found on a very low level.
- 3 - the last stressed tone can be one of the following :

a) rising, eg.



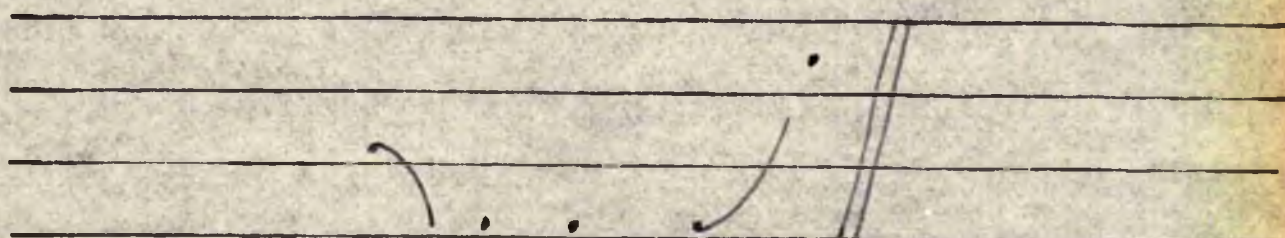
'föftv 'fe:n ?

b) level followed by higher tone (or tones), eg.



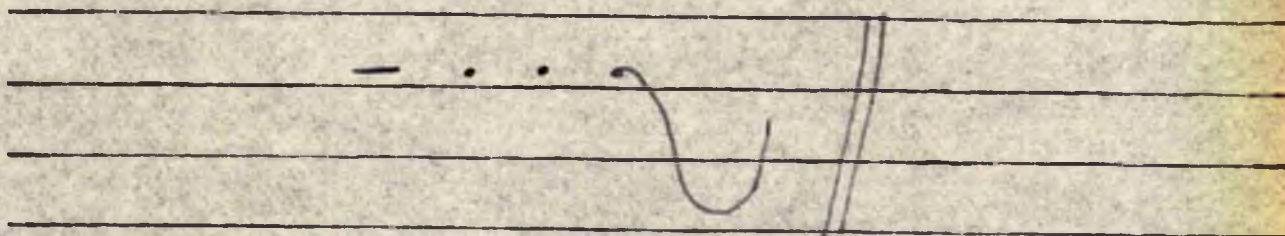
'föftv ffil 'ha :fa (f) ?

c) rising followed by a higher unstressed tone, eg.



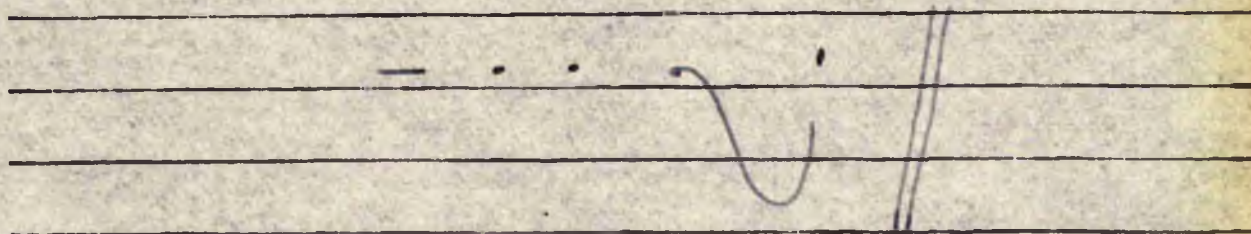
'föftv ffil 'ha :fa (f) ?

d) falling - rising, eg.



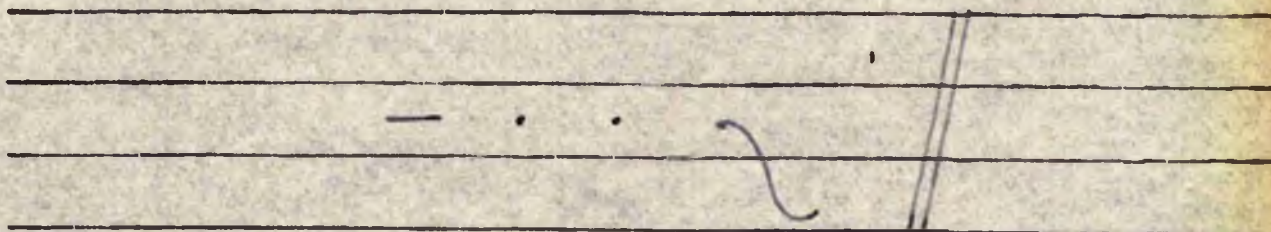
'föftv ffil 'be:t ?

e) falling - rising followed by higher unstressed tone
(or tones), eg.



'fiftu fi: 'be:t hum

f) falling, followed by an unstressed level tone higher
than the end of the preceding or a number of
unstressed level tones on an ascending order, eg.

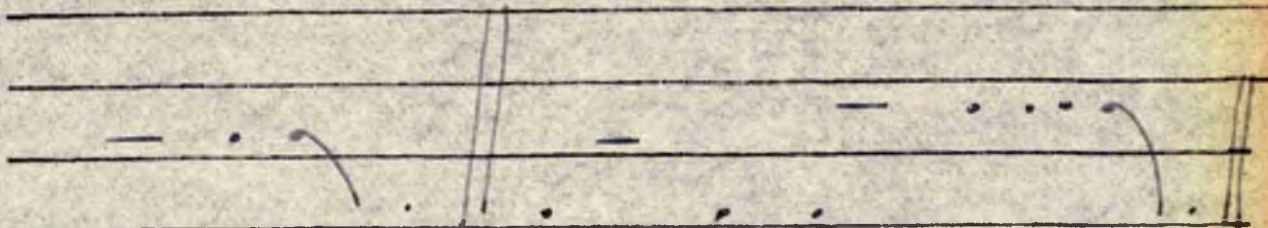


'e a: taffe: f 'fi:bü h, ?

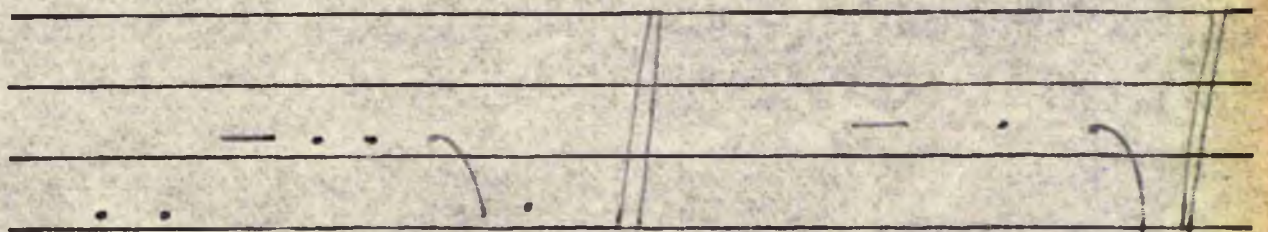
Pattern 1b.

There is no fundamental difference between this and
pattern 1a, except that :

- 1 - the range of 1b. is narrower,
- 2 - their context of use are different, as will be seen
later, an example of 1b. is :



'mürr mühawwaʃ tæ ʔa:l jɛ: rɒ'ʃɛn mitləl'maʃar.

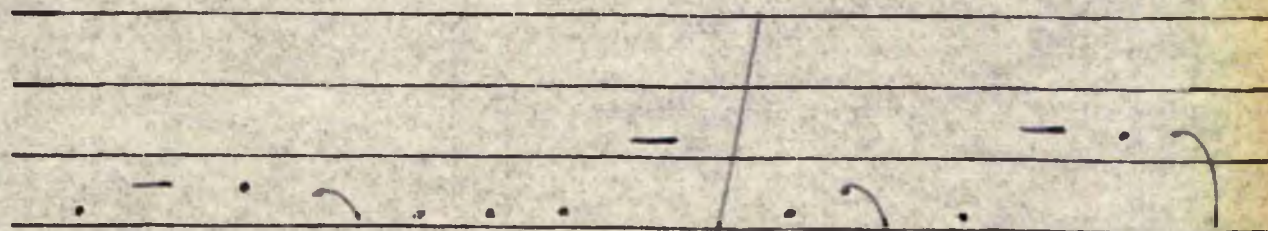


əssæ 'lɔ:mü ʔa'ɫɜ:ɔm. 'cɜ:f əl 'h:l ?

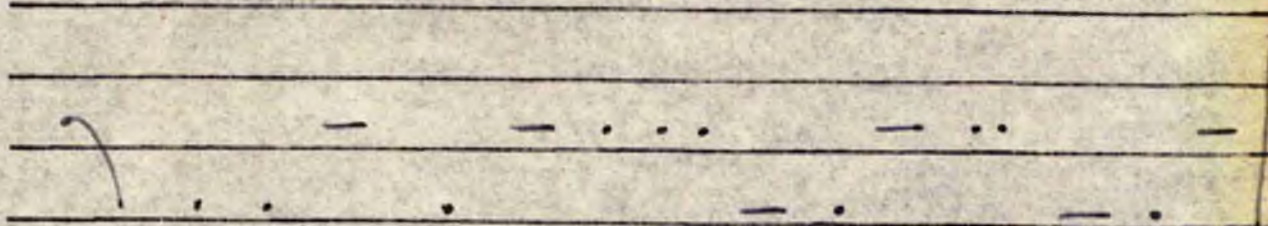
Pattern (2b).

This pattern has the same arrangement as 2a, except that :

- 1 - the range is narrower,
- 2 - this pattern may, (contrary to 2a),
end in a stressed level tone, eg.



ʔu,bəʔdɛ:ŋ 'xarɒʃ mɪn əl'be:t , ʔu'rɒ:h ʔɪlp: dʊccɛ:n



'hu:w tælp:'tæ ʔaw 'ʔarɒʃ mɪn ʔas'ha:büel, bəʔtɛ:li:n ,

u'faccüdduc'ce:n, u,sæ raqu: minnū'c üllöll p'di:

'fī: bü h).

There are four spoken groups in this intonation example; the last only is not in 2b pattern.

Pattern (1c).

The range of this pattern is the narrowest. The general impression here is that practically all the spoken group is on a 'monotone' falling at the end, because the ups and downs here are negligible. The final fall is invariably a long one, but the general arrangement is similar to that of 1b, eg.

lp: 'hawlp wa'lp: quwwa üllp: billp: h !

Despite the narrow range of this pattern, it is capable of being described as emphatic, as will be seen later.

Pattern (2c).

This pattern, too, gives a somewhat monotonous hearing, and unlike 2a and 2b, it invariably ends in a stressed level tone sometimes followed by unstressed ones. The general arrangement of this pattern is similar to that of 1c, except as far as the end is concerned, eg.

'jɛɲi: 'ha:dæ: 'jintæ,hɛ: jɛ: 'ræbbi: ?!

In 1c and 2c patterns, emphasis can be conveyed by more than one device, eg.

- 1 - clenching the teeth,
- 2 - extra tenseness in articulation
- 3 - facial expressions
- 4 - bodily movement, such as shaking the head or gesticulating.

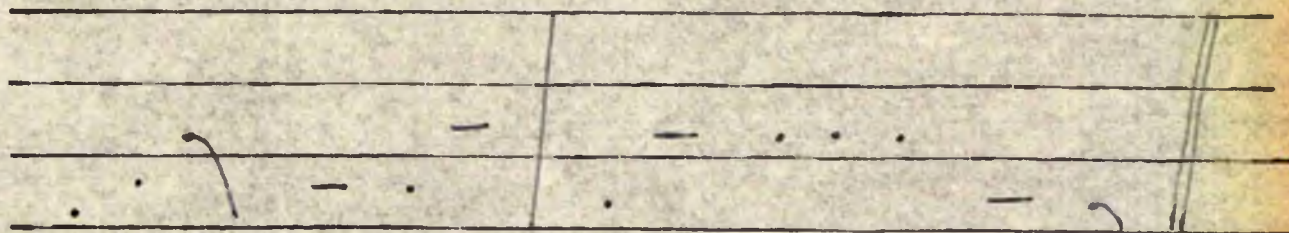
The use of intonation patterns.

In studying the formal use of a tune, it has been felt necessary to use and differentiate between two terms :

1 - spoken group

2 - spoken set.

Here, as throughout this phonological section, of the work, the term 'spoken group' has been used in the sense of a chain, so to speak, of linguistic sounds between two pauses. A spoken set, on the other hand, may be composed of one or more spoken groups. The main difference between the two is that while a spoken set is always an independent spoken intercourse or, as it is sometimes called, complete speech, a spoken group may or may not form such an independent intercourse; when it does. it is called a spoken set made up of only one spoken group. In the notation of intonation, a spoken group will be followed by the punctuation / while a spoken set will be followed by // eg.



wü h₁ss₃:t r₁sijdr:r , t₁'qu: lill₂: mar₁i:d'sill.

A spoken group may have two similar patterns in succession (both, of course, of the same tune) eg.

w ə l mʊrm ɔftə fə ʒat, wü 'dæ wwaxat ,

The whole spoken group is uttered between two pauses only, but it has a recurring section in it. It is only in such a case that two unstressed levels in succession can differ in height. This is always found in counting and in detailing and the like, eg.

'wə:hɪd ʒɪt'ɪn:n tɔlp:tɔ 'ʒar'ba ʒa(h)

and

'zæ wwaf ba'np:tu'wə:hɪdɔ fr: 'ʒadɔ n ü wə:hɪdɔ fr: 'lphɪ

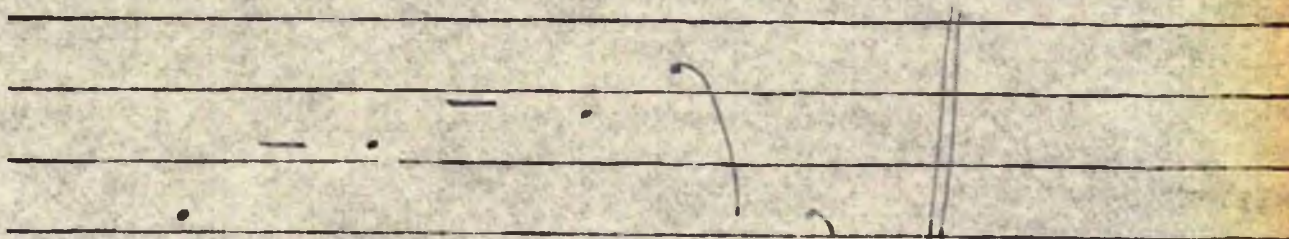
The broken lines are not punctuations of spoken groups, but limitations of recurring sections of it.

It has been stated in the definition of a 'spoken set' above that this may be composed of more than one spoken group, i.e. within the spoken set, there may be a pause or a number of pauses, the last of which is the end of an independent spoken intercourse or complete speech. Between each two pauses, i.e. in each spoken group, there will be a number of tones the highest of which characterizes the range and in conjunction with the others decides the tune and pattern of the spoken group. An intonation of a spoken set may consist of more than one pattern, since a spoken set may consist of more than one spoken group.

Now we come to the notional use of the intonational patterns described above in which the meanings attached to each pattern are discussed. The patterns will be dealt with in the same order as above.

The Use of 1a.

This pattern is mainly used in emphatic affirmation, eg.



u 'xallas'np: lɔc 'zi:r 'majj !

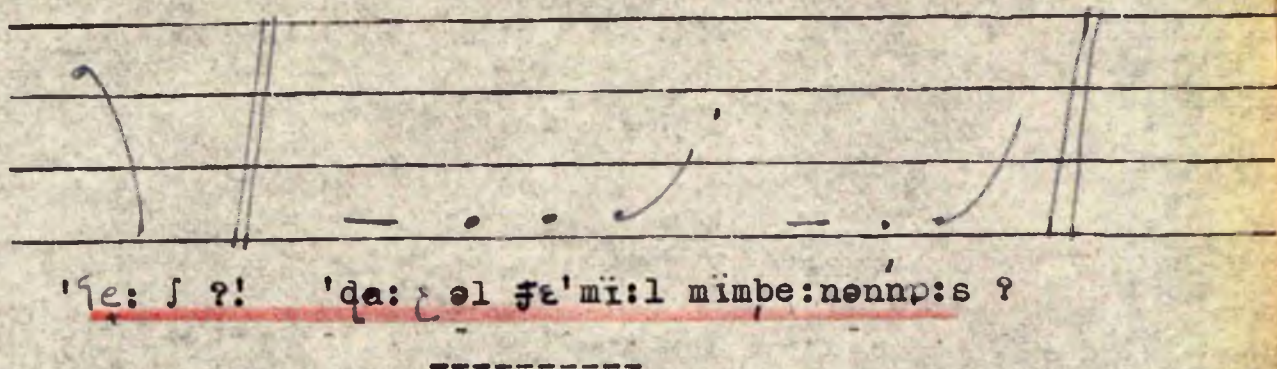
wü 'mü: ʃ 'ɛ: dæ t ər rɪ'ʒɛ:l !

hən nɒf'sɜː ʃɪf'ti: ʃü 'xamə ɛɪp:si: hɪbɔ:l !

'qu: ʃ mɔ:ʃɛ: ɹ ɛllə: h !

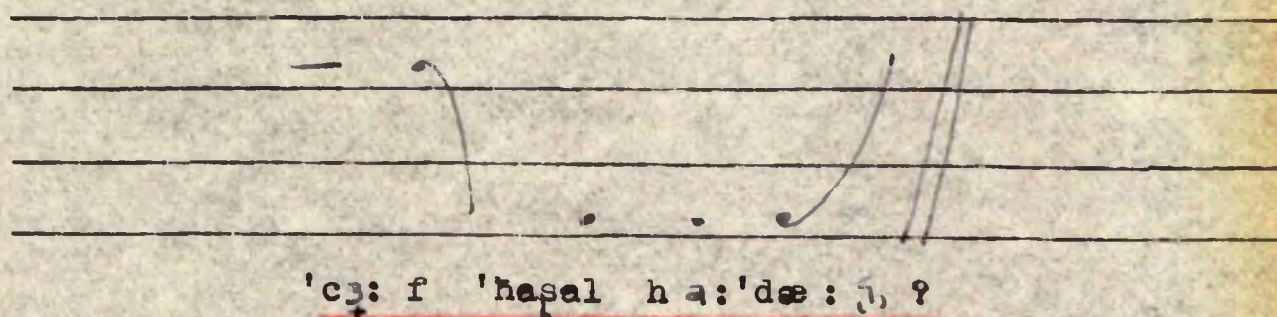
el 'wɔ:lɪ: 'hædɛ: 'dɔ:lɪm !

This is also used in emphatic interrogation with the interrogation particles and in exclamation, eg.

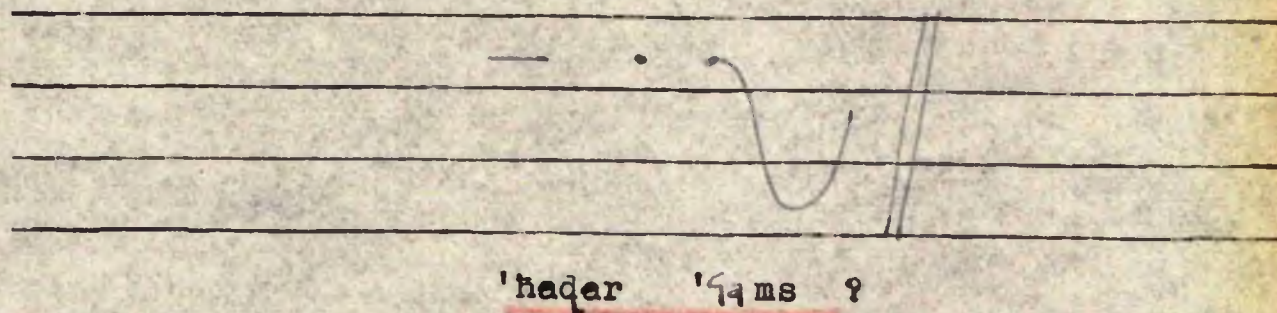


The Use of 2a.

This pattern is mainly used in emphatic interrogation (usually implying indignation or amazement) which might or might not be introduced by an interrogative particle. An example of the pattern introduced by the particle is :



Another example of the pattern without the particle is:



The Use of 1b.

The use of this pattern is in affirmation in general, but ~~under~~ this general term, the following can be counted:

- 1 - Statements used in social intercourse such as greetings, eg.

es sə 'lɔ: mü ʔa'ɪ: cūm

- 2 - Interrogation introduced by a particle, eg.

'cɜ:f 'hɑ:lɔc wü 'hɑ:l ɔl ʔə'h'ne:l ?

- 3 - Complete statements, i.e. spoken sets of one group, eg.

ed'dənʒ: 'harr ɔl'jɔ:m.

'ha:dæ: riʃʃa:l batʃa:l

4 - Detail: (the lines are for marking items), eg.

'lp: ci n əl 'fæʃtelli'fʃi:bənp: wafʃe'ma:t wəl'xazə:

Parenthesis connected with this pattern are treated as parts of it and include :

a) afterthoughts, eg.

'lɜ: ʃ ma: habaʃ'lu:ʃ bɪʃs, mɪnʃənʃi'pʊ:h jɪtmərfalbi h,

b) calling with "j :", eg.

es sɛ 'lp:mü ʒa'lɜ:cʊm , ʒali:

The Use of 2b.

The use of this pattern is for the following :

- 1 - Interrogation without the introduction of a particle; it is here that intonation plays a syntactic role, eg.

tiñ 'tɔ: x 'xɪdɪ (h) ?

The above example can be said on pattern 1b.

- 2 - Interrogation with the introduction of a particle, eg.

wü 'cɜ: fæc ʃant jɛbnɛl' ɛamm ?

- 3 - A spoken group (standing as a part of a spoken set) eg.

,wü ʃa np: 'mɔ: ʃa ʃɜ:t ɛɪn'dæc ,

ʕu'jo:m 'jud^opub 'dæ: ʕ, ʕu'jo:m jəh, ʕəm ʕalp:'dæ: ʕ

5 - Parentheses connected with this pattern are also treated as parts of it and include :

a) afterthoughts, eg.

tiʕ^orif ʕrb^oni: ʕah'mad səʕɾ:d, cɜ:f ʕolla:ma: hadæ:h ?

b) calling by means of "j :", eg.

ʕu saddir^onp: jɛ: ʕabd el ʕa'zi:z,

The Use of 1c.

This pattern is used for the following meanings :

1 - Pious ejaculations and expressions, (treated as exclamations), eg.

●1 'hamdɔ lil'lp: ɣalp: 'cüllɪha:l !

lp: 'hawlp wa'lp: quw'wa ɣɛl'lp: bäl'lp: h !

'jɛ: sɛt'tɛ:r jɛ: 'rɔbb !

2 - Monologues of regret or similar emotional expression, eg.

jɛ: sɛ 'lp:m ɣalp: ha:derriɟ'ɟɛ:l !

- 3 - Reproach in a friendly manner, eg.

jɛ: sœ 'ɛɛ: d ! (long final syllable extra duration)

- 4 - Exclamations of grief or despair, eg.

'ɛɛ 'xɛ:r ,jɛ: ɛab'dalla:h

The fact that most of the examples of 1c. are exclamatory indicates that emphasis is by no means a matter of wide range of pitch; a point in favour of the classification adopted in this work. All these exclamations have an emphatic character.

The Use of 2c.

This pattern is used in the following meanings :

- 1 - Aspiring to something not likely to be realised, eg.

jɛ: sœ'lp:m lpw jɪhsal 'ha:dœ ʃ ;

2 - Reproach in a friendly manner, eg.

mü: ʃ 'ɛ: b ɛa'ɫɜ:c !

PHONETIC SECTION .

-- --

C H A P T E R I X .

Definitions of terms used .

-- -- --

DEFINITIONS

of the terms used.

The terms used throughout this work, and especially in the chart of consonantal sounds on page ¹⁰¹¹ 257, are in most cases used in their generally accepted sense. In some cases, however, new terms have been created or existing ones modified to meet an immediate purpose of this work. An attempt has been made here to furnish a glossary in which every term is explained, and a start will be made with those terms denoting articulations, and their places in A.D. speech.

I. ARTICULATIONS:

1. Bilabial : Articulated by both lips.
2. Labio-dental : Articulated by pressing the lower lip against the upper teeth.
3. Dental : Articulated with the tip of the tongue against the upper teeth.
4. Denti-alveolar¹ : The denti-alveolar of A.D. are of two types:
 - a) Plosives: articulated by the blade and tip of the tongue against the teeth-ridge and the upper teeth respectively,

1. This term has been introduced by Prof. Firth.

and b) Fricatives: articulated by the blade of the tongue against the teeth-ridge, and the tip of the tongue against the lower gum.

Both types are covered by the same term.

5. Alveolar : Articulated with the front of the tongue against the alveolum.
6. Post-alveolar : Articulated with the tip of the tongue against the hindermost part of the alveolum with an appreciable amount of tongue retraction, and probably some retroflexion.
7. Palatal : Articulated with the front of the tongue against the hard palate; the tip of the tongue is held against the lower teeth and gum.
8. Velar : In this type of articulation, the back of the tongue is held against the velum or soft palate.
9. Uvular : Articulated with the back of the tongue against the uvula.
10. Pharyngeal : Articulated by drawing the root of the tongue towards the back pharyngeal wall, thus causing some constriction of the pharynx.

11. Glottal : Caused by complete or partial closure or tightening of the glottis, thus causing a stop, a creak or a friction.

II. MANNERS OF ARTICULATION:

1. Plosives : Resulting from a complete blocking of the air stream at a certain position, followed by an immediate and sudden release of the air.

2. Fricatives : Caused by hindering, but not completely stopping, the air stream at some point between the glottis and lips.

3. Liquids : In this work, the term "liquid" covers all sounds classified as neither plosive nor fricative.

Such includes:

a) nasals

and b) orals, which cover

i) rolled,

ii) laterals

and iii) semi-vowels.

- a) Nasal : Articulated with the soft palate lowered so that the air escapes through the nose.
- b) i) Rolled : Articulated with a rotated mobile organ such as the blade of the tongue or the uvula; there is no rolled uvular in A.D.
- ii) Lateral : Articulated with the air stream escaping on one or both sides of the tongue.
- iii) Semi-vowel: Articulated with the tongue in similar position to that for a close vowel; it will be seen that it is not necessary that a semi-vowel should have a closer tongue position than that of a corresponding close vowel.

III. CORRELATIONS:¹

1. Voiced : Accompanied by drawing the vocal cords closer; when these are agitated by the pulmonary air stream, they vibrate and thus voice is produced.

1. For definition of this term see p. III

2. Voiceless : The vocal cords, during the articulation of voiceless consonants are held wide apart.
3. Back resonance : Back or dark resonance is a term applied to a type of resonance covering the pharyngealized (i.e. emphatic), velarized and velar articulations; it can be ^{that} said the main part of the resonance chamber for this is formed at the buccal or velar areas, i.e. at the "back" of the tongue.
4. Front resonance : The main part of the resonance chamber for this type of resonance is formed in the palatal or pre-palatal area, i.e. at the "front" of the tongue.
5. Medium resonance : This is so called because it can be described as neither back nor as front; in fact, it covers three resonance variations:-
- a) retracted or nearer back,
 - b) advanced or nearer front,
 - and c) localized or characteristic,
- which is found in the two consonants in the syllable, ^{when} both are

described as having medium resonance. When such a consonant is followed by an emphatic, it is retracted, but when it is followed by a consonant of front resonance, it is advanced. For example, if "b", a consonant of medium resonance is examined, it will be found:

1. retracted in rabaʔ ,
 2. localized in rabaḥ ,
- and 3. advanced in rabaʃ .

Adjacent vowel : The vowel of the same syllable in which a certain consonant is found.

CHAPTER X.

The Consonants .

-- --

THE CONSONANTS

Classification of Consonants.

The phonetic classification of the A.D. consonants can be arranged according to two aspects:

a) physiological, i.e. according to the place of articulation,

and b) physical (or acoustic), as follows:-

i) according to the manner of articulation,

ii) according to resonance.

From the physiological aspect, there are eleven articulatory possibilities. Starting from the lips to the glottis, the following order can be traced:-

1. Bilabial	:	b	ɸ	m, w
2. Labio-dental	:		f, v	ɱ
3. Dental	:	d		l̥, n̥
4. Denti-alveolar:		d, ɖ, t, ʈ, ʈ̥. z, ʒ, ʒ̥, s, ʃ, ʃ̥.		l̥, n̥, l̥, n̥.
5. Alveolar	:			r, l, n
6. Post alveolar	:			ɹ, ɻ, ŋ
7. Palatal	:	ɟ, c	ʒ, ʃ	ɲ, j
8. Velar	:	g, k	ɣ, x	ŋ
9. Uvular	:	q		ɴ
10. Pharyngeal	:		ʕ, ħ	
11. Glottal	:	ʔ	h	

At a glance, the reader will appreciate a major articulatory division of these consonants into two physiologically distinct groups:

1. Lingual, i.e. articulated at one point or another of the tongue. This ranges from the dentals to the uvulars.

2. Non-lingual, i.e. articulated with other than the tongue. The importance of such classification will be understood in the light of the chart of the A.D. Consonants given on p. 257. The non-lingual division will include the labials and the infra-buccals. The former include the bilabials and the labio-dentals, while the latter cover the pharyngeals and the glottals.

A classification according to the manner of articulation may be presented as follows:

1. Plosives : b, d, t, k, g, q, f.
2. Fricatives: p, f, v, z, s, ʃ, x, ɣ, h, h.
3. Liquids¹ : m, w, n, l, n, l, n, r, l, n, r, l, n, p, j, n, n.

From the point of view of resonance, the A.D. consonants are found to follow a grouping arrangement similar to that given in the phonological section under the prosodical heading "W. N. Y."

1. For definition of the term "liquid", see p. 327

The consonants are, according to this resonance feature grouped as follows:-

- Group I : d, n, l, ɳ, ɭ, t, ʈ, ʑ, ʈ
 Group II : d̪, t̪, s̪, ʂ, g, ʈ̪, ɳ̪, k, x, ɳ̪, q
 Group III : b, m, w, ɸ, ɱ, f, v
 Group IV : ɛ, ɸ, h, ɦ
 Group V : n, r, l, ɳ, ɭ, ɭ
 Group VI : d, t, n, l, z, s
 Group VII : ʃ, ʒ, ɟ, ʝ, c, ɟ

Group I has the backest resonance which is sometimes called "emphasis". Emphasis is a complex organic process involving the raising and drawing back of the back of the tongue, i.e. it is a combination of velarization and pharyngealization. This can be seen on comparing the two X-Ray pictures of 'ɳ' and 's', which are two correlatives by emphasis in the dialect. Such comparison will show the organic dissimilarity of the postures of the two sounds, as far as the back of the tongue is concerned, in relation both to the velum and to the back pharyngeal wall. The emphatic resonance is inherent in the emphatic consonants, i.e. it is the attribute of the consonants of Group I in every position and phonetic context.

The resonance of a consonant of Group II is back but not emphatic. In the articulation of every consonant of

this group, the back of the tongue is (velar or velarized) but not drawn towards the back pharyngeal wall; i.e., not pharyngealized. This back resonance of Group II is also inherent, and the quality of a consonant of this group is not as dull as that of a consonant of Group I.

In Groups III, IV and V, the resonance is not inherent, i.e. it is not similar or uniform in all phonetic contexts as in that of Groups I and II. The resonance of these three groups can be retracted¹, localized or advanced. The localized resonance of a consonant of these groups is characterized by a consonant being in a succession of two, each having a medium resonance. When a consonant of one of these groups is followed by an emphatic consonant, its resonance is retracted, but when it is followed by a consonant of Groups VI or VII, it is advanced. In their localized resonance, however, these three groups can be described as follows: Group III is duller than IV, and IV more so than V. Examples to illustrate the three terms (retracted, localized and advanced) are:

R.	L.	A.
<u>ba</u> tta:l	<u>ma</u> lɕu:ŋ	<u>ma</u> ʃtu:m
ra <u>ba</u> t	ru <u>ba</u> h	ru <u>ba</u> ʃ
<u>ma</u> qa: (h)	<u>ma</u> lv: (h)	<u>ma</u> ʃɛ: (h)

1. The term "retracted" here is not used in any organic sense; it simply denotes a backish variety of medium resonance.

R.	L.	A.
<u>h</u> aɖar	<u>h</u> aɸar	<u>h</u> aɟer
<u>n</u> aɖar	<u>n</u> ɸar	<u>n</u> ɟer
ʂaɸaɟ (ʂ)	nɸaɟ (ʂ)	dʂaɸaɟ (ʂ)

The two groups VI and VII of the A.D. consonants have a front resonance, VII being more front than VI. This resonance is inherent in both groups.

In the following ~~chart~~: *diagram*:

1. Group I has a maximum of backness.
2. Groups II and IV have a maximum jaw opening.
3. Group VII has a maximum of both frontness and closeness of the jaw. These organic maximums are paralleled in resonance as observed by perception and described above.

diagram
The ~~chart~~ is as follows:-

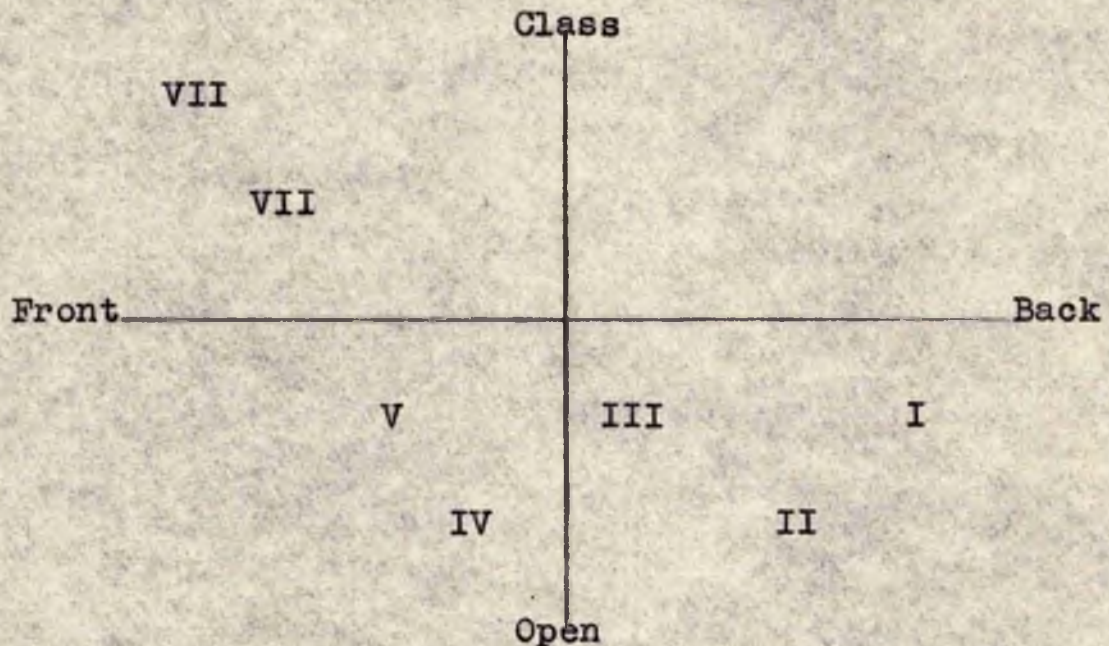
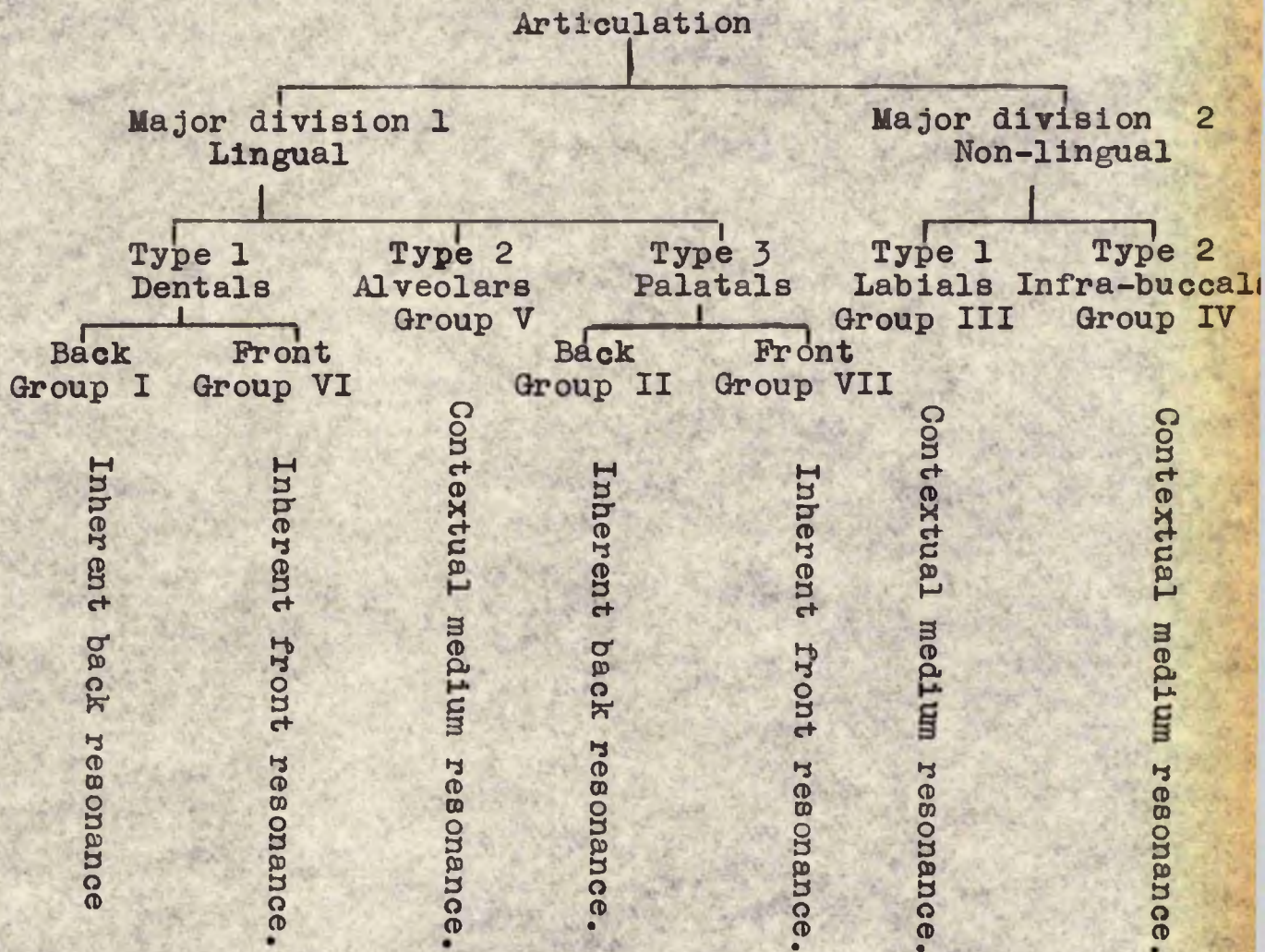


diagram
This ~~chart~~ gives a dimensional illustration of the position of the groups in relation to each other as far as

resonance is concerned.

The following chart outlines the above classification:



A summary of articulatory behaviour

1. Articulations behind the hard palate (Groups II and IV) coincide with the widest space between the jaws. These include: velars, uvulars, pharyngeals and glottals.
2. In all palatal articulations the tip of the tongue is lowered.

3. The denti-alveolar articulations are of two types:

- a) Plosives (or a junction of nasal and plosive) in which the tip of the tongue is against the inside of the upper teeth; the front of the tongue is held against the alveolum.
- b) Fricative (or a junction of plosive or nasal and fricative) in which the tip of the tongue is against the inside of the lower gum while the front of the tongue is against the alveolum.

C O R R E L A T I O N S

[illegible]

THE CONSONANTS IN DETAIL

A - The Plosives

Plosion, even in its most tense occurrence in A.D. (i.e. as in the case in a double final plosive) is a lax feature. In the intervocalic position as well as in the pre-consonantal one, it is lax to the point of affrication:

e.g. 't' and 'c' in

citə:b and hacəm

There are thirteen plosive consonants in A.D. as follows:-

b, d, d̥, d̄, t̪, t̬, t̰, ʃ, c, g, k, q and ʕ.

In these consonants, the following types of articulations are to be recognized:

- | | |
|-------------------|---------------------|
| 1. bilabial | b, |
| 2. dental | d, |
| 3. denti-alveolar | d̥, d̄, t̪, t̬, t̰, |
| 4. palatal | ʃ, c, |
| 5. velar | g, k, |
| 6. uvular | q, |
| 7. glottal | ʕ. |

For these, the following types of resonance can be listed:

- | | |
|--------------|------------------|
| 1. emphatic | d̥, t̪, |
| 2. back | d̄, t̬, q, k, q, |
| 3. medium | b, ʕ, |
| and 4. front | d̄, t̪, ʃ, c. |

For the explanation of resonance terms, reference is made to the classification of consonants according to resonance, pp. 252 - 6

It is important to realize, when studying the plosive consonants of A.D. that the feature of tensity and laxity must be taken into consideration at every point of studying and classifying. It has been submitted above that a plosive in intervocalic position can be as lax in perception as to suggest an affrication or even friction. This observation is ^{supported} ~~suggested~~ by the results obtained using instrumental techniques such as palatography and kymography. In palatography, over a thousand palatograms have been taken and traced on transparent paper by means of a projector especially designed for such use in the laboratory of the Phonetics Department of the School of Oriental and African Studies, University of London, by Prof. Firth and Mr. H. J. F. Adam.¹ The palatograms were of words and sentences in which a consonantal articulation in particular was the subject of study. It has been found that tensity and laxity are prosodical features related to position rather than phonetic features pertinent to articulation. The eight positions graded according to these features are to be found under "The Prosody of tensity and laxity," p. 183

1. For further details, see "Improved Techniques of Palatography and Kymography," Firth and Adam, Bulletin of the SOAS. Vol. XIII, Part 3, 1950.

In abstracting tensivity and laxity of articulation from the palatograms, this feature has been associated with the dimensions of the area and clear imprint of the wipe-off. The criterion adopted was: a tenser articulation is related to a wider area of wipe-off on the artificial palate and vice-versa. The photographic copies of these palatographic examples, which are to be found in the appendix, will be referred to in studying the sounds in detail.

Less conclusively and with reservation, such feature can be abstracted from kymographic tracings. In a kymogram, the following terms can be used:

1. "rest" or "line at rest", which represents zero agitation of the style, and which can be represented by a line drawn by the style at zero agitation while the drum is revolving,

2. "line of tracings", which can be correlated to an utterance,

3. "wave form" or "modulation", which can be correlated to a voiced sound in the utterance,
- and 4. "excursion", i.e. the distance of displacement of the style at ^a given point on the line of tracings.

It is the extent of excursion that can be correlated to tense and lax articulations, since it correlates with the amount of pressure exerted on the timbre and, through

that, on the style at a given moment during the utterance.

The results obtained from the kymographic technique in studying this feature agree with those obtained through both perception and palatography and are expressed under the same heading of "The Prosody of tensity and laxity", p. 183 . Detailed reference to kymograms will be given in the fuller study of sounds.

THE PLOSIVES IN DETAIL

'b'

Phonological symbol: b.Definition of sound: A voiced bilabial plosive.Organic Description:

In the articulation of this sound, the following takes place:

1. The lips are in contact; this contact varies in tensiity according to position and length. i.e. whether single or double. Compare:

kymo. No. 7 - cɛtəb,
 12 - mɔɹ^əbu:r,
 13 - qɔbɔd^ətɔlp:tə (h),
 23 - fəbci:,
 and 77 - bɔh^ər,

in which tensiity can be correlated to the duration and the extent of excursion.

2. The teeth are apart, though the space between depends on the resonance of the consonant, which is described below.

Phonetic Description:

1. This consonant gives no palatograms.

2. The vibration of the vocal cords depends on the positional context, and for that, reference is made to voicing and unvoicing, p.175 .

3. The resonance of 'b' is medium; when 'b' is followed by an emphatic, it has a retracted resonance and when followed by a consonant of Groups II, III, IV or V, the resonance is localized, but when it precedes a consonant of Groups VI or VII, its resonance is advanced. For comparison, the following examples are given:

R.	L.	A.
başal	baɫɔɫ	baɖaɫ
ba:qat	ba:nɔt	ba:tət
be:q	be:ɟ	be:t

4. When final in the spoken group, the lips, in the articulation of this consonant, sometimes remain in contact, and the 'b' is then nasally exploded, e.g.

ḫa:b - ḡalob - qar^əb

The nasal explosion, as well as the greater part of the consonant, is unvoiced.

The laxity of articulation of 'b' can be correlated to one of two features in kymography:

a) lack of duration,
and b) smallness or absence of excursion.

Both features are found in intervocalic and pre-consonantal 'b', e.g.

kymo. No. 13 - qAbad tæl v: tæ, h,

23 - Sabci:

51 - habazz3:nob,

kymo. No. 55 - əddəbāh,

61 - ʕabtər.

To a less extent, this is also a feature in post-consonantal 'b', as in:

kymo. No. 9 - maqbū:l,

12 - maʔbū:ɾ,

26 - jifbā:(h).

Final 'b' in the spoken group has a long duration as compared with it in other positions. For example, one may compare the above kymograms with the following ones:

kymo. No. 7 - cətəb

14 - jidfəb

20 - haʔab

In this final position, it is almost wholly unvoiced, and sometimes is even aspirated, as in the kymograms No. 7 and No. 20 above.

'q'

Phonological symbol: 'q'Definition of sound:Organic Description:

The following takes place in the articulation of 'q'.

1. The lips are shaped according to the adjacent vowel, but in the posture of this consonant, they tend to project with only a slight indication of rounding.

2. The tip of the tongue is in contact with the upper teeth; it hardly touches, if at all, the teeth ridge; the tongue contact is always dental and sometimes extended back to the denti-alveolar zone, as shown in the comparison of the following palatograms:

Dental	Denti-alveolar
faqɪ:ha (h)	qɪ:f
faqaɪ	qa:ɛ (ɛ)
xuqʌ:ɛ (ɛ)	quha: (h)
biqɛa (h)	ɛqɪ:h
ɛadma: (h)	ɣamdʌ (h)
maqʌ (h)	qabqʌ (h)

In the dental column, there are intervocalic and pre-consonantal 'q' and in the denti-alveolar the initial and post vocalic consonantal.

The back of the tongue is raised and drawn back towards the back pharyngeal wall, a process that is termed

pharyngealization and is thought to be the main factor in "emphasis". Reference is made here to the X-Ray picture of the posture of 'q', which, if compared with that of 'd', though these two are not correlatives, gives a clear idea of this process.

3. According to this picture, the space between the jaws is very narrow; in fact it shows superimposed molars with a possible implication of touching. It is felt nevertheless that this "touching" is not invariable, an assertion that is based on both perceptive and introspective evidence ~~as well as upon kymographic technique.~~

In the X-Ray picture, the body of the tongue is longer than with any other consonant. This is reminiscent of the Classical Arabic phonetic term (استطالة = *sistiṭālah* - becoming long) which is made in connection with the Classical Arabic consonant ض .

Phonetic Description:

The articulation of this consonant is lax in general, but the extent of this laxity is related to position (see p.183). The tensest articulation of this consonant occurs when it is double final in the spoken group, and the laxest when it is intervocalic. In this position, the contact is extremely slight and the duration short; the resulting impression in perception is nearer dental

fricative than dental plosive. This can be seen in palatograms like

faɖi:ha .h,

faɖaŋ

xuɖu:ɛ .ʃ.

In the first example, the dental contact is almost negligible; the only appreciable contact is lateral. On the left of the left line, this lateral wipe-off covers almost half the denti-alveolar and alveolar zone, with a little untouched patch in the former, until it reaches the canine line where the untouched area approaches the circumference of the artificial palate; here it widens again into the post-alveolar, pre-palatal, mid-palatal and post-palatal zones. On the right of the right line, this lateral wipe-off starts from the denti-alveolar to the post-palatal zones, covering almost half the space between the right line and the circumference. In the two palatograms 'faɖaŋ' and 'xuɖu:ɛ,ʃ', there is no lateral wipe-off posterior to the canine line in the former and to the lateral incisor line in the latter; except for a fingerprint of the informant on the right side. The absence of dental wipe-off in these three palatograms illustrates and explains that intervocalic 'ɖ' is nearer dental fricative than dental plosive. This is not the case in palatograms like:- ɖi:f - ɖa:ɛ - ɖa:ha:(h) - ʃaɖɖi:h - ɣamɖa,h, -

qabqə h - bayi:d - hamaq - humə:d - xadqɪ:h - ɛadqa (h) -
xadqə:h - ɛadq and haq.

This consonant, on the other hand, is denti-alveolar when it is followed by a denti-alveolar plosive, e.g.

rafaqtu h

rafaqdæwa:h

rafaqtalɒbu h

In the kymogram (13 - qabadtəɒ:tə h) we can abstract only one occlusion; one stop and one release for 'qt'; 'q' is unvoiced in this example and, according to perception, is also denti-alveolar.

The results obtained from kymography are in conformity with those given above according to perceptive and palatographic evidence.

It will be found that short duration and the small extent of excursion are two features in the tracings that correlate to the lax articulation of 'q'. For example, in the following kymograms these are found:-

kymo. No. 17 - xadaɣ,ɤ (intervocalic)

52 - jɪqhac (pre-consonantal)

and also in 1 - jɪqdɪ:] (post-consonantal)

44 - jɪfqa

But in

kymo. No. 2 - ɛadqa (h)

19 - haq

and 68 - m^hq

in which 'q' has its tensest articulation, the duration is longer and the release is more marked. In the last two examples, 'q' is partially unvoiced.

ḍ

Phonological symbol: 'd'

Definition of sound: A voiced denti-alveolar plosive.

Organic Description:

In the articulation of this consonant, the following take place:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue touches, and wholly covers the inner side of the upper teeth; the front of the tongue covers a considerable part of the alveolum - the back of the tongue is raised, but not drawn back.
3. The space between the jaws is narrow.

Phonetic Description:

In relation to voice, of the four contextual positions in which this consonant occurs, it is wholly voiced in two:

When it is followed by a vowel, e.g. baḍḍeqḍuh'r
and when followed by 'q', e.g. saḥmaḍḍaḥar
but, it is partially unvoiced when followed by 'ṣ', e.g.

waḷaḍḍa:liḥ

and wholly unvoiced when followed by 't', e.g. waḷaḍḍatajjib.

The resonance of this consonant is back and inherent, i.e. it does not vary from one context to the other.

This consonant is not suitable for palatography, since in the examples in which it occurs, there is always a following emphatic consonant which interferes in the palatographic sense, i.e. such examples that contain two or more sounds which would

give overlapping wipe-offs on the artificial palate are not to be relied upon in palatography for abstraction, because of the resulting ambiguous wipe-offs, in which a clear delimitation is virtually impossible.

There is, however, what one can call the characteristic wipe-off of denti-alveolar plosive articulations, which gives a shape in common to the palatograms of d, t and t̥. One may properly consider 'd̥' as belonging to this palatographically related group of articulations.

Similarly, in X-Ray photography, the posture of d̥ is a doubtful procedure to rely upon, because when it was attempted, the informant, unaware as he was, produced a posture of 'd' probably on phonological or some other ground, and because it is related in A.D. with its specific contexts and so it cannot be isolated.

The denti-alveolar character of 'd̥', however, has been observed both perceptively and kinesthetically through examples of utterances containing this sound and repeated to my informant until he accepted my pronunciation. This is a procedure which has been employed throughout the research.

d

Phonological symbol: d (or t in the junction td)

Definition of sound: A voiced denti-alveolar plosive.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is in contact with and covers the inner side of the upper teeth; the front of the tongue touches a great deal of the alveolum, as can be seen in all the palatograms of the 'd' articulation pp. 19-23 in the appendix of palatograms. The back of the tongue is lowered, as can be seen in the comparison of the X-Ray pictures of the postures of 'd' and 'q'. The tongue body is formed in almost a semi-circular shape in 'd' but, as we have seen, it is long and almost flat in 'q'. The pharynx shows no constriction.
3. The space between the jaws is narrow and the teeth are almost touching.

Phonetic Description:

For the voicing and unvoicing of 'd' see Voicing and Unvoicing pp. . The resonance of 'd' is front and inherent, i.e. it is always front, in all contexts.

The palatograms of 'd' articulation show that, as in other consonants, laxity and tensity are related to position. Intervocalic 'd' is laxest, and double 'dd' final in the spoken group is tensest. Let us, for this purpose, compare the

following palatograms:

madd - ɛa:d - baddæɣ^h - dæba^h - ɣabdæɣ^h - ɣadb^h
and ɛadæ:b.

In "madd" (p.23 appendix), the wipe-off in the left and right zones goes as far back as half-way between the first molar and the canine lines, i.e. the contact is partly post-alveolar. In "ɛa:d" (p.22), it almost ends with the canine line. In "baddæɣ^h" (p.22), it actually ends with that line. In "dæba^h" (p.23) while it ends with the canine line, there is a number of untouched patches of chalk in the area of wipe-off. In "ɣabdæɣ^h" (p.21), the wipe-off reaches only as far back as half-way between the lateral incisor and the canine lines: but in "ɣadb^h" (p.20), it almost ends with the lateral incisor line with untouched patches of chalk in the area of wipe-off; while in "ɛadæ:b" (p.19), the wipe-off is undefined, and even the dental and denti-alveolar areas are full of small untouched connected areas. This palatographic evidence, in conjunction with palatograms of other consonants, shows that tensity and laxity are a matter of position, and here reference should be made to "tensity and laxity" p.183 .

The above statement can also be backed by the comparison of excursion and duration in the kymograms

No. 14 - jidɣab

15 - madqu:q

No. 31 - masdu:d

32 - mafdu:d

33 - masdu:d

55 - eddæbæh

61 - lohð

The greatest excursion is found in the kymogram No. 55, in which 'd' is double medial. Final 'd' in 31, 32 and 33 is tenser in articulation than the double medial 'd' of Kymo. 55: but in A.D. kymography, an excursion in the tracings of final plosives is not great in extent; duration, however, is another feature that permanently marks this position. Final 'd' in 31, 32 and 33 is almost wholly unvoiced.

In Kymo. 15, 'd' is unvoiced, and is even slightly aspirated.

't'

Phonological symbol: tDefinition of sound: A voiceless emphatic glottalized denti-alveolar plosive.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The front and tip of the tongue is in contact with the inner side of the upper teeth and with a considerable part of the alveolum as can be seen in all palatograms of 't' (pp. 5-9) in the appendix. A statement such as that given for intervocalic 'd', (that the wipe-off of 'd' in "ɛadæ:b" is undefined and even the dental and denti-alveolar areas are full of small untouched connected areas), is not valid for 't', since in every palatogram of 't', the wipe-off is both dental and denti-alveolar.

This consonant is emphatic, i.e. the back of the tongue is raised and drawn back towards the back pharyngeal wall, causing a pharyngeal constriction, as can be seen in the X-Ray picture of the 't' posture. This consonant is glottalized.¹

1. Dr. Joseph of Guy's Hospital kindly consented to comment on the X-Ray pictures published in this work; his commentary on the pharyngeal-laryngeal area of 't' picture was: "Something peculiar has happened. The distance between the lower posterior part of the tongue increased considerably. A shadow has moved forwards from the posterior pharyngeal wall at level of C. 5, as if the upper end of the pharynx was opened and the upper end of the larynx closed."

3. The space between the jaws is narrow; the teeth are almost clenched.

4. The vocal cords are closed except when 't' is aspirated (see aspiration, pp. 194).

Phonetic Description:

The peculiar sound of 't' is the total of two acoustic effects resulting from two organic releases, one is denti-alveolar, the other glottal. The pharyngealization of this consonant is, I consider, responsible for the resonance effect termed "emphasis". This statement is in the light of pharyngealization being only in the emphatic consonants.

The denti-alveolar character of 't' is studied, beside perception, by palatography. Not all the denti-alveolar wipe-offs of this consonant, however, are similar in size, due to the tensity and laxity of articulation which depends on positional contexts (see tensity and laxity, pp. 183-88). Let us now examine the palatograms of

ħaʈʈ - xabaʈ - ʒaʈʈab - ʈa:b - ʕaʈʈa:b - ʕaʈma:ʕ
and ʒaʈab, to see that as far as laxity and tensity are concerned, they fall in the above order. For this purpose, the wipe-off between the left and the right lines ^{is} examined as follows:

In "ħaʈʈ" (p.9), the wipe-off covers the dental, the denti-alveolar and almost half of the post alveolar zones ending practically half-way between the canine and the first molar

lines. In "xabaɬ" (p.8), it actually ends with the canine line, anterior to the position in the first example. In "ɬaɬɬab" (p.8) it stops slightly short of the canine line, while in "t̪a:b" (p.5), it stops shorter still. In "ɬaɬt̪a:b" (p.7), it leaves an untouched peak at the back of the alveolar zone. In "ɬaɬma:ɬ" (p.6), this untouched peak continues further forward almost three quarters the distance between the canine and the lateral incisor lines. While in "ɬaɬab" (p.6), the untouched area with a feathery circumference extends ahead to the lateral incisor line, and a number of untouched patches is scattered in the dental and denti-alveolar zones. The permanently found patch on the median line in the alveolar zone represents a weak spot in the structure of the artificial palate itself, and could be wiped only with cotton. The same comparison can be made between examples with front close vowels and back close vowel such as:

q̪ɬt̪t̪ - xabɬ:t̪ - haɬt̪t̪b - t̪ɬ:b - muɬt̪t̪b - ɬɬt̪ɬa:m -
and xat̪t̪:b

xuɬt̪t̪ - hubu:t̪ - xuɬt̪t̪a:h - t̪u:f - ɬaxt̪u: - xuɬba,h -
and xuɬt̪u:b.

It has been stated that 't̪' is classified as a glottalized consonant. In the junctions 't̪f' and 't̪h', however, this consonant is not glottalized, but aspirated; reference is to be made here to the kymogram

No. 3 - jɬt̪ fɬ:

as compared with:

No. 8 - maqtu:ɛʰ

20 - haɬab

and 72 - qatʰn.

When 't' is in junction with a denti-alveolar fricative such as a following s , z , ʃ or a preceding s , z , ʃ , the tip of the tongue, in 't' articulation will be held against the lower teeth, but the front of the tongue will be against the alveolum, e.g.

xajjaɬzambɪ:l

xajjaɬslrwa:ɭʰ,h,

xabaɬsa:hbu,h,

jiɛɬaɛʰ

dʌɣʌɛɬa:hɪr

qaraɛɬa:hɪr

't'

Phonological symbol: 't'Definition of sound: A voiceless denti-alveolar plosive.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue touches and wholly covers the inner side of the upper teeth. The front of the tongue is in contact with a considerable part of the alveolum. The back of the tongue is raised but not drawn back.
3. The space between the jaws is narrow.

As in the case of 'd', and all sounds that occur only as pre-consonantal, no X-Ray picture has been attempted for this consonant on account of the inability of the informant to give a posture of it. Due to the position in which such a consonant occurs, no palatograms are given for it, because an emphatic always follows it and this gives an interfering wipe-off. The above organic description can be confirmed by employing the perception-technique.

Phonetic Description:

This consonant is back, but not emphatic, i.e. it is one of the consonants of Group II. Preceding, i.e. in junction with, a following d or t, it is with zero-plosion.

When it is followed by a vowel, it is aspirated, e.g.

təqrʊb

tɪtʃlɒɛ

tɪsɣar

Examples of this consonant with zero plosion are:

qɑ:matqarɒbat

qɑ:mattʃalɒɛat

't'

Phonological symbol: 't'(and 'd' in the junction td)

Definition of sound: A voiceless denti-alveolar plosive.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is in contact with, and covers the inner side of the upper teeth. The front of the tongue covers most of the alveolum; the highest point of the tongue is nearer front than back and the back of the tongue is lowered, as can be seen in the X-Ray picture of the posture of 't' The body of the tongue is almost semi-circular in shape, and can be contrasted with the shape of the tongue in the posture of 't̥' for abstracting the relation of positive and negative emphasis.

The denti-alveolar character of 't' can be abstracted from the palatograms with 't' articulation (pp. 14-18 in the appendix of palatograms) where in all these palatograms, there is a denti-alveolar wipe-off, with a difference in size which is later discussed.

3. The space between the jaws is narrow, as can be seen in the X-Ray picture quoted above.

Phonetic Description

For the voicing of 't', see the prosody of voicing and unvoicing (pp. 175-81). The tensity and laxity of the articulation

of this consonant can be abstracted from the palatograms with 't' articulation. For this purpose, the following palatograms can be contrasted:-

batt - ʕabat - ʒattəb - tə:b - ʕaftə: (h) - ʕatfah -
ʒatəb.

In "batt" (p.18), the wipe-off covers the dental, denti-alveolar, alveolar and post-alveolar zones, leaving only a slight untouched peak on the left of the median line at the back of the latter zone. This peak is larger in area in "ʕabat" (p.18), where it is seen on both sides of the median line. In "ʒattəb" (p.17), this untouched peak at the back of the post-alveolar zone reaches ahead to a point almost halfway between the first molar line and the canine line. It extends further still in "tə:b" (p.14) and another untouched area partly dental and partly denti-alveolar grows larger. In "ʕaftə: (h)" (p.16), the area of wipe-off is less in the post-alveolar zone than is the untouched area. This is also the case with "ʕatfah" (p.15). But in "ʒatəb" (p.14), the wipe-off is almost completely bilateral; between the left and the right lines, there are only dots of wipe-off. The general shape of this latter palatogram is characteristic more of fricative than plosive articulations. Similar comparisons on basis of laxity and tensity can be made between palatograms with 't' articulation in junction with close back

and front vowels such as:-

bitt - baxi:t - ti:h - jictib - mütɛɪb - ɛatɪ:q -

and hu:t - huttu:h - tu:b - ɬuxtɪ (h) - mütɛab

and fütu:h.

For the aspiration of 't', see the prosody of aspiration (p. 194); but here reference should be made to the following palatograms to be compared:

No. 6	ɬact ^h ær
25	ət ^h ɬasær
27	jɪt ^h u:
80	mat ^h ɾü:c




When preceded by s , z or ʃ , the tip of the tongue in the articulation of 't' is against the lower teeth, e.g.

ɛstəha: (h) - dɔɣɔztɪ (h)

'j'

Phonological symbol: 'j'Definition of sound: A voiced palatal plosive.Organic Description:

1. The lips are shaped according to the adjacent vowel, but a posture of 'j' will have the lips slightly spread.

2. The tip of the tongue is lowered against the inside of the lower teeth; the front of the tongue is raised to touch a portion of the hard palate that is related to the adjacent vowel as can be seen in comparing the three palatograms on page 52:  ,  and  .

In the first, the wipe-off reaches as far front as post-alveolar; in the second mid-palatal, but in the third palatogram, the wipe-off is only back-palatal.

3. The space between the jaws is narrow.

Phonetic Description:

This consonant is one of Group VII of resonance; its resonance is front and inherent, i.e. j is with front resonance in all phonetic contexts, e.g.

jeɓal ,

ɛajɛb ,

ɛaji:b,

jerɒh ,

jemal ,

bahɛ:j.

Tensity and laxity of the articulation of 'j' is related to position rather than sound. If the following palatograms are compared, it will be found that the wipe-off

of 'j' differs in size and shape according to position; the palatograms are:

həjʃ - ʒa:ʃ - ʃɛ:b - ʃaʒʃɛm - ʃaʃmaʒʃ .

In "həjʃ" (p.52), the wipe-off is primarily bilateral covering the back palatal and almost half the mid-palatal zones on either side. This wipe-off extends inwards at the back of the back-palatal zone, narrowing to a line connecting the two lateral wipe-offs. In "ʒa:ʃ" (p.51), though the wipe-off covers an equal area, scattered feathery spots are found in the mid-palatal zone; the wipe-off is not as defined as in the previous example. In "ʃɛ:b" (p.49), the mid-palatal wipe-off on the right is extended by a finger print of the informant when he was taking the artificial palate out of his mouth. In this palatogram, there is no wipe-off at the extreme back of the palatogram, as in the two former examples, to connect the two lateral wipe-offs. The inward extension of the bilateral wipe-offs ceases at the extreme back of the left and the right lines. This extension, in the palatogram of "ʃaʒʃɛm" (p.51), ceases even before it reaches the left and the right lines. In "ʃaʃmaʒʃ" (p.50), the wipe-off hardly extends in front of the back-palatal zone.

This gradual decrease of size in the palatograms corresponds with a gradual increase in laxity from one position to another.

When this feature is related to excursions in kymograms, it will be found that in

kymo. No. 75 - xarɔjɛt titmaʃʃɛ: ʰ

the intervocalic 'j' correlates to no excursion at all. A small amount of excursion is found in the:

kymo No. 16 - jɪʃar Pre-consonantal

42 - jɪfjɛɛ Post-consonantal

and 35 - jɛrɔŋɣali: Initial

It is found that as in all final releases, final 'j' in the spoken group correlates in kymography to hardly any excursion, but it has more duration than in other positions:

cf. kymo No. 40 - ʃafwa:j

71 - nɔsɟ

'c'

Phonological symbol: 'c'Definition of sound: A voiceless palatal plosive.Organic Description:

1. The lips are shaped according to the adjacent vowel, yet, as in 'j', a posture of 'c' will have the lips slightly spread.

2. The tip of the tongue is lowered against the inside of the lower teeth. The front of the tongue is raised to touch the hard palate; but the portion of the hard palate that is touched varies according to the adjacent vowel, as can be seen in comparing the two palatograms "fī:c" and "bü:c" on page 48.

In the first, the lateral wipe-off reaches as far front as denti-alveolar, but in the latter, the wipe-off is only back palatal.

3. The space between the jaws is narrow.

Phonetic Description:

This consonant is one of resonance Group VII; the resonance of this group is front and inherent, e.g.

ci:d

ce:n

cū:ŋ

haci:m

hacem

hucū:ma_h

fī:c

rdmā:c

rdmū:c

The tensivity and laxity of articulation of 'c' is also related to position rather than sound; as can be seen in

comparing the palatograms:

fūcc - bū:c - fūccū:h - cū:b - mæcū:f - būcɛɣ - ɛucū:f.

In "fūcc" (p.48), there is a mid-palatal wipe-off on both sides. The back-palatal wipe-off of this palatogram is extended inwards in front of the fourth molar line until it reaches the left and the right lines. In "bū:c" (p.48), the wipe-off covers only a part of the back palatal zone; there is no mid-palatal wipe-off. This wipe-off is larger in size than that of "fūccū:h" (p.48). In "bū:c" (p.47), there is a mid-palatal wipe-off right of the right line, but not left of the left line. The utterance of this example shows a tenser articulation than usual, and therefore, the palatogram does not fit in the gradual decrease of wipe-off. In "mæcū:f" (p.48), lateral wipe-off is found only on the right of the back palatal zone; on the left, only a small touch is found at the extreme back of the palatogram situated just left of the left line. A similar but smaller wipe-off is found in "būcɛɣ" (p.48), while in "ɛucū:f" (p.47), there is hardly any wipe-off at all. The largest wipe-off is then that of double final and the smallest is that of intervocalic.

In kymography, if excursion is related to tensity and laxity, intervocalic 'c' is found to correlate to a very small excursion in:

kymo. No. 5 - ɛacɛl,

and though it has no release, the final 'c' is with long

duration in kymo No. 80 - mat^əɹū:c

Aspiration of 'c' is stronger with the close than with the open vowels: compare the kymograms below:

No. 10 - harʌqcitə:b

22 - mʌfcū:l

but

65 - cəsɒ.

'g'

Phonological symbol:Definition of sound: A voiced velar plosive.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is lowered against the inside ~~side~~ of the lower teeth. The back of the tongue is held against the velum. The highest part of the tongue is that of the area of contact.
3. The opening between the jaws is fairly wide.

This articulation gives no palatogram, because it falls behind the area of the artificial palate; an emphatic invariably follows this consonant. No X-Ray picture has been attempted for this consonant, for the same reason as is given in the study of ḡ and ḡ (see pp 264-7).

Phonetic Description

This consonant is one of Group II, which has an inherent back resonance. If the term "velar" is used to denote articulation at the soft palate including both [velar] and [uvular], the following statement will hold good for all the three plosive consonants articulated at one of these two places (i.e. g , k and q): that is, a "velar" plosive articulation, in a junction of "velar" plus "emphatic", is affricated; e.g. "faragḡa:lim" would be realized as

"f^haragḡa:lim" or even "f^har^hḡa:lim".

'k'

Phonological symbol: 'c'Definition of sound: A voiceless velar plosive.

Organic Description: Similar to that of 'g'. No X-Ray pictures were taken: as is the case in all velar articulations, no palatograms were given.

Phonetic Description:

This consonant is also one of Group II, with an inherent back resonance. It is affricated when immediately followed by an emphatic, e.g.

"q_inni: f_i:bak_tajjib" is realized as:

"q_inni: f_i:bak_xtajjib" or even

"q_inni:f_i:bax_tajjib". (Luq. Rec. 1.)

'q'

Phonological symbol: 'q' otherwise ɟ, c, x or ɣ follow^{ly} q.

Definition of sound: A voiceless uvular plosive.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip and front of the tongue are lowered. The back of the tongue is raised to touch the rearmost part of the velum, almost touching the back pharyngeal wall, as can be seen in the X-Ray picture of 'q' posture. This pharyngeal near-touch is approximated in the area above that of pharyngeal 'ɛ' and 'h', i.e. it is buccal rather than pharyngeal (compare X-Ray pictures of q, ɛ and h). The whole body of the tongue is retracted more than with the emphatics (compare X-Ray pictures of q , ɗ , t̤ and ɣ). This tongue retraction is an articulation in 'q' but a feature of articulation in the emphatics.
3. The space between the jaws is wide (see X-Ray picture).

Phonetic Description:

It has been stated above that the tongue retraction is an articulation of 'q' but a feature of articulation in the emphatic, i.e. it is pharyngeal articulation in the former, but pharyngealization in the latter. The consonant 'q' is one of the Resonance Group II. Its resonance is

inherent, i.e. a feature of the consonant in every context.

The term "uvular" is used in the classification of 'q' in preference to "buccal", because of traditional phonetic considerations.

This consonant gives no palatograms. As in the case of 'g' and 'k', when q is pre-emphatic, it is affricated, e.g. kymo. No. 1 - jiqd̥: jiqy̥d̥: or even
jiy̥d̥:

In kymo. No. 8 - maqt̥u:ɛ, 'q' has a negative excursion before the occlusion of 't̥'. This may be interpreted similarly to that of kymo. No. 1, considering 'q' excursion from the same point of view as that of a fricative (i.e. rising and then falling), or it may be treated as a displacement due to the effect of glottalization in the 't̥' immediately following. Both explanations are probable.

The laxity of pre-consonantal 'q' can be correlated to the small excursion in the kymograms:

No. 9 - maqb̥u:ɭ

24 - qa:jaqɬaxu:h

78 - faq̥ər

It could also be abstracted from kymo.

No. 10 - səraqcit̥:b

that 'q', in the junction 'qc' is not exploded.

'ɿ'

Phonological symbol: 'ɿ'Definition of sound: A voiceless glottal plosive.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tongue is also shaped according to that vowel.
3. Similarly the opening between the jaws is according to the adjacent vowel.

Phonetic Description:

This glottal consonant is one of group IV, with a medium resonance which can be:

1. retracted, i.e. backish, when 'ɿ' is followed by an emphatic, e.g. bʌdʌɿtʌjjib

2. localized, when this consonant is followed by a consonant of Groups II, III, IV or V, e.g. bʌdʌɿqʌb ʃu

jɿɿbʌ: ʌ,

bʌdʌɿɕali:

bʌdʌɿnd: ʌ,

3. advanced, when 'ɿ' is followed by a consonant of Groups VI or VII, e.g. bʌdʌɿtu

mʌɿju:ɾ

In spite of the classification of 'ɿ' as a plosive, in special contexts it is found to be a voiced creak, e.g.

1. pre-consonantal : mʌɿju:ɾ

2. post-consonantal : jɿdʌb

3. intervocalic - səʃal

Reference is made to kymograms

No. 14 - jidʃab

16 - jɪʃar

22 - mʌʃcʊ:ɭ

24 - dɑ:jaqʃaxu:h

25 - ətʃasər

26 - jɪʃbʌ:ɰ

27 - jɪʃtu:

in which 'ʃ' is a

voiced creak

as contrasted to No. 11 səʃal in which 'ʃ' is plosive.

B - THE FRICATIVES

Friction in A.D. articulation is also a lax feature in general; nevertheless, this laxity varies according to the phonetic context and to position. A single fricative is more lax than a double fricative, and a pre-consonantal or an intervocalic fricative is laxer than a fricative in any other position. To test the above statement made on a perceptive basis, one should apply some instrumental techniques to establish a measure of agreement.

Palatography is the appropriate technique for studying this feature in fricative articulations. For this purpose, the various palatograms of a single consonant will suffice as an example. A permanent feature in the palatograms of the fricatives is the widening of the wipe-off at the point of articulation, with a corresponding narrowing in the untouched area at the same point. It happens that all the fricatives capable of giving palatograms have this widening and the corresponding narrowing in the areas on the artificial palate, anterior to the canine line. It is the extent of the widening of the wipe-off in these areas that is correlated to tensity and laxity of articulation.

The following examples may be thus examined according to the above principles:

hass - habas - massah - sa:b - fahsah - fasba:b
and hasab.

In "hass" (p.27), the wipe-off is complete left of the left line in the denti-alveolar and the alveolar zones. Right of the right line, there is an untouched patch only in the denti-alveolar zone. Between the left and the right lines, there is no wipe-off except in the alveolar zone, where it extends to points on each side of the median line, almost half-way between this latter line and the left and right lines. In "habas" (p.26), the wipe-off in the denti-alveolar zone is not complete left of the left line, and is very slight right of the right line. The extension of wipe-off in the alveolar zone reaches to points less than half-way between the left and right lines on either side and the median line. While in "hassah" (p.26), the wipe-off is similar to that of "habas", but in the dividing line between the wipe-off and the untouched area in general as well as in the alveolar zone, there are feathery patches on both sides. But in "sæ:b" (p.24), the extension of the wipe-off on the left side hardly exceeds that of the left line; on the right, however, it reaches half-way between the right and median lines. In "ʔafsaḥ" (p.25), the left area is full of feathery patches throughout, and in "ʔasba:b" (p.25), the extension or widening of wipe-off on the left of the alveolar zone ceases exactly at the left line. In "hasæb" (p.24), there is very little wipe-off in the alveolar zone between the left and right lines.

This gradual restriction in the wipe-off corresponds to the gradual increase in laxity from one position to the other, as systematized in the phonological section (pp. 183-88).

Similar comparisons can be made, not only between palatograms of 's' with other vowels, but with the examples, with different vowels, of every single fricative for which palatograms have been taken.

Not only tensivity and laxity can be studied through palatography but also the denti-alveolar character of the articulation 's' as well as the place of articulation of other fricatives. This will be studied in discussing the fricatives in detail.

Voicing and unvoicing of the fricatives can be correlated to features of tracings in the kymograms. This also will be studied in the detailed discussion of the fricatives, but here, at least, we can refer to the voicing of 'h' in specified positions which can be abstracted from, for example, the kymograms:

No. 67 - lphd

and 68 - mahd

The Fricatives in Detail.

'f'

Phonological symbol: 'f'Definition of sound: A voiceless bilabial fricative.Organic Description:

1. The lips are in light contact, but allowing air to escape between them in a manner similar to gentle blowing.

2. The space between the jaws resembles that in the case of 'b'.

Phonetic Description:

This consonant is one of Resonance Group III. The resonance of that group is medium, i.e. it varies according to the phonetic context to:

a) retracted, when the consonant is followed by an emphatic, e.g. ʔayrɒbɸɑdʒi:ha(h)

b) localized, when this consonant is followed by one of Groups II, III, IV or V, e.g. ʔaʒʒabɸann

and c) advanced, when it is followed by a consonant of Groups VI or VII, e.g. harɒbɸi:ʃɛbwa(h)

This consonant gives no palatograms.

Another pronunciation of the above examples, which is optional in the dialect (both are not heard together in one individual's speech), can be transcribed:

ʔayrɒffɑdʒi:ha(h)

faʃʒaffann

harofff:ʃɛbwa^h

The first discussed pronunciation is the commoner (see kymo.

No. 84 - jilɛabʔinnɔ:r

'f'

Phonological symbol: 'f'Definition of sound: A voiceless labio-dental fricative.Organic Description:

1. The lower lip is in contact with the upper teeth.
2. The space between the jaws varies according to the context.

This consonant gives no palatogram.

Phonetic Description:

The 'f' consonant is one of Resonance Group III; the resonance of this group varies according to the phonetic context to:

1. retracted, i.e. backish, when 'f' is followed by an emphatic consonant, e.g. jifqah

2. localized, i.e. characteristic, when it is followed by a consonant of Groups II, III, IV and V, e.g.

jif^oroh - jif^oni: - safwa:j - jifham

and 3. advanced, i.e. frontish, when 'f' is followed by a consonant of Groups VI or VII, e.g. safjed

This consonant is slightly voiced when it is followed by j, d or q, e.g.

Kymo. No. 42 - jifjeʕh

43 - safdi:

44 - jifqah

It is sometimes voiced in intervocalic positions, e.g.

Kymo. No. 30 - ma:fɪ:ʒzæjji h

Compare:

38 - jif^ʔroh

39 - jif^ʔnt:

40 - ʒafwa:ʒ

41 - ʒafjed

60 - jifham

64 - ʒafw

and 76 - haf^ʔr

'v'

Phonological symbol: 'f'Definition of sound: A voiced labio-dental fricative.Organic Description:

1. The lower lip is in contact with the upper teeth.
2. The space between the jaws is narrow.

Phonetic Description:

This consonant is one of Resonance Group III, but its resonance is always advanced, since it has a defined pre-consonantal context with a following 'z' in all cases; the latter consonant is of Group VI, e.g.

kymo. No. 36 - jivzæŋ

69 - qavz

'z'

Phonological symbol: 'ʒ' or 'ɖ' (in the junctions ʒz and
ɖz respectively).

Definition of sound: A voiced emphatic denti-alveolar
fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowels.
2. The tip of the tongue is lowered against the lower teeth. The back of the tongue is raised and drawn back in a manner similar to that illustrated in the X-Ray picture of the posture of 'ʃ'. No X-Ray picture has been taken of this consonant because the criterion of photographing such pictures has been the availability of a reliable posture. When such postures were thought reliable, a sound has been given the same symbol as that of the phonological unit of which it is a variant. The 'z' that invariably follows in immediate junction palatographically interferes with the wipe-off of 'ɖ', and therefore, no palatograms of 'ɖ' have been taken.
3. The space between the jaws is narrow.

Phonetic Description:

As an emphatic, this consonant is of Resonance Group I; it is always followed by 'z' in immediate junction. In an utterance such as "rɒfɒzɜ:nɒb" only the context will decide whether the phonological transcription of this example should be "rɒfɒʒzeenɒb" or "rɒfɒɖzeenɒb".

'z'

Phonological symbol: 'z'Definition of sound: A voiced denti-alveolar fricative.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is lowered and situated against the lower teeth; the back of the tongue is raised, but not drawn back. No palatograms have been made of this articulation because this consonant is always followed by an emphatic consonant, and all emphatics interfere in a denti-alveolar wipe-off. Similarly, no X-Ray picture has been attempted because of the difficulty of obtaining a reliable posture.
3. The space between the jaws is narrow.

Phonetic Description:

This is one of the consonants of Group II, with an inherent back resonance, e.g.

baʒt

-

ħamsaḡahar

When followed by 's' in an immediate succession, this consonant is partially unvoiced, e.g.

yamaʒsa:lin

'z'

Phonological symbol: 'z' (or s in the junction 'sz')

Definition of sound: A voiced denti-alveolar fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is lowered to touch, or slightly press, the lower teeth. The front of the tongue touches the alveolum, as can be interpreted from all the palatograms of the 'z' articulation (pp. 28 - 32). No X-Ray picture has been taken of 'z' posture, but since 's' is a phonological symbol of this sound, and the consonant 's' is a correlative of it, it is proper to infer that if the posture of 's', as photographed in X-Ray (p.), is to be taken as evidence to the posture of 'z', then the shape of the body of the tongue in this latter is almost semi-circular.

3. The space between the jaws is narrow.

Phonetic Description:

This consonant is one of Resonance Group VI, i.e. it has an inherent front resonance, e.g.

jiz²rdz⁵

jizqu_l

For the unvoicing of 'z', see Voicing and Unvoicing, p. 175. It is reasonable to connect the wipe-offs in 'z'

palatograms with tensivity and laxity, as has already been done for the plosive consonants. Let us, then, examine the following palatograms:

hazz - ʔamaz - ʒazzəm - zæ:m - ʕahzəm - ʕazħam - ʒazəm.

In "hazz" (p.32), there is no untouched area anterior to the canine lines left of the left or right of the right. From the angle of these two lines, with the incisor line, the wipe-off extends inward as it approaches the lateral incisor line, proceeds posterior to it becoming gradually more restricted until it reaches the first molar line.

In "ʔamaz" (p.31), there are two untouched areas, one is left of the left, the other right of the right line. Compared to the case of "hazz" in the alveolar zone, the wipe-off in this case is more distinct on both sides ^{of} ~~from~~ the median line. The same can be said of "ʒazzəm" (p.31). In "zæ:m" (p.28), there are some untouched patches scattered within the denti-alveolar, the alveolar, and even the post-alveolar areas, of wipe-off. In "ʕahzəm" (p.30), there is practically no wipe-off between the left, and the median, lines; similarly in the case of "ʕazħam", (p.29), except that the scattered untouched dots are spread over a wider area. In "ʒazəm" (p.28), there is little wipe-off in the denti-alveolar area between the left and the right lines.

Similar comparisons can be made with the palatograms of 'z', with the back close and front close vowels to show

that the tensivity and laxity of articulation varies according to position, as defined in the phonological section (p.183).

In kymography, the short duration of the intervocalic 'z' can be correlated to laxity, e.g.

kymo. No. 50.- ɣazi:z as opposed to

51.- ɦabʌzzɜ:nɒb

As final in the spoken group, 'z' is partially unvoiced, as in kymo. No. 50 above. Comparisons may be made between:

kymo. No. 34.- rafʌzzɜ:nɒb

36.- jivzæɣʲ

45.- ɬazfʌt

and 46.- mʌzcʊ:m

in all of which 'z' is wholly voiced.

's'

Phonological symbol: 's' (and 'q' in the junction qs).

Definition of sound: A voiceless emphatic denti-alveolar fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is lowered against the lower teeth. The front of the tongue is against the alveolum. The back of the tongue is raised and drawn back towards the back pharyngeal wall, as can be seen in the X-Ray picture of the 's' posture.
3. The space between the jaws is narrow (also see picture).

Phonetic Description:

The 's' consonant is of Resonance Group I. The resonance inherent in this group is called emphasis and is the outcome of a complex organic process, part of which can be interpreted by comparing the X-Ray pictures of the postures of 's' and 's', the two correlatives in this feature.

Again, the tensity and laxity of the 's' articulation is a matter of position, as can be seen in comparing the following examples:

xabas - ɛasab - ɬa:b - xasma.h - ɛasab.

In "xabas" (p.12), though the bilateral wipe-off in the denti-alveolar zone is less than that of "xasab" (p.12), the widening of the wipe-off in the alveolar zone is more marked in the former than in the latter example when measured from the inner anterior angles formed by the canine line with the left and right lines. The same measurement will show that "sa:b" (p.10), is laxer still, especially because of the untouched patches on both sides within the area of wipe-off. In "xasmũ.h, " (p.11), the untouched denti-alveolar area is larger than in "sa:b", while in "xasab" (p.10), there is very little wipe-off in either dental or denti-alveolar zones. Such gradual lessening of the area of wipe-off corresponds to the increasing laxity from one position to the other (Compare palatograms with back close and front close vowels, pp. 10-13).

's'

Phonological symbol: 's'Definition of sound: A voiceless denti-alveolar fricative.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is lowered against the lower teeth. The front of the tongue is held against the alveolum. The back of the tongue is raised but not drawn back. No X-Ray pictures have been taken of this articulation because of the difficulty of obtaining a reliable posture. Similarly no palatograms have been given because an emphatic invariably follows this consonant and interferes with the wipe-off of 's'.
3. The space between the jaws is narrow.

Phonetic Description:

This consonant is one of Group II, which has an inherent back resonance, e.g. *saʔaʔʔ*

ʔiʔaʔʔ

From these, it can be seen that the limited context in which the consonant occurs is pre-emphatic, whether in immediate junction with, or separated by a vowel from the following emphatic, as is the case with *ʔ*, *ʔ*, and *ʔ*.

's'

Phonological symbol: 's' (or 'z' in the junction 'zs').

Definition of sound: A voiceless denti-alveolar fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is lowered against the lower teeth. The back of the tongue is low, and the whole body of the tongue is in an approximately semi-circular shape. The relation between the position of the tongue in 's' posture, as seen in the X-Ray picture, and that of 'ʃ', seen in another picture, is that as between emphatic and non-emphatic.

The denti-alveolar character of 's' articulation can be abstracted from the palatograms of 's' (pp. 24-27) where every wipe-off is denti-alveolar.

3. The space between the jaws is narrow (see X-Ray picture).

Phonetic Description:

The 's' consonant is one of Resonance Group VI; it has an inherent front resonance, i.e. front resonance is a feature of 's' in every position, e.g.

saqa: - səbʌb - səħab - səlob - sətər and səjed.

The tensity and laxity of articulation of 's' can be abstracted by studying the following palatograms:

hass - habas - massah - sæ:b - fafsah - fasba:b and hasab. i.e., in the order tense, laxer, laxest.

In "hass" (p.27), the wipe-off is complete left of the left line in the denti-alveolar and the alveolar zones. Right of the right line, there is an untouched patch only in the denti-alveolar zone. Between the left and the right lines, there is no wipe-off except in the alveolar zone where it extends to points on both sides of the median line almost half-way between this latter line and the left and right lines. In "habas" (p.26), the wipe-off in the denti-alveolar zone is not complete left of the left line, and is very slight right of the right line. The extension of wipe-off in the alveolar zone reaches to a point less than half-way between the left and the right lines and the median line. In "massah" (p.26), the wipe-off is similar to that of "habas", but on the dividing line between the wipe-off and the untouched area in general as well as in the alveolar zone, there are feathery patches on both sides. In "sæ:b" (p.24), however, the extension of the wipe-off on the left side hardly extends beyond the left line at any given point; on the right, however, it reaches half-way between the right and the median lines. In "fafsah" (p.25), the left area is full of feathery patches throughout,

and in "ʔasba:b" (p.25), the extension or widening of the wipe-off on the left of the alveolar zone ceases exactly at the left line. In "nasəb" (p.24), there is hardly any wipe-off in the alveolar zone between the left and the right lines.

The gradual restriction in the size of the wipe-off corresponds to the gradual increase in laxity from one position to the other, as systematized in the phonological section (pp.183-88).

In no junction is 's' voiced; as the following kymograms will show:-

No. 25 - etʔasər

31 - masdʊ:d

65 - cəsəb

and 71 - nəsɟ

'3'

Phonological symbol: 'z' in the junction 'zʃ',
and 'ʃ' in the junction 'ʃz'.

Definition of sound: A voiced palatal fricative.

Organic Description:

1. The lips slightly project even when a front close vowel precedes '3', when they are slightly spread as well, e.g. mʌ:fɪ:3zæjji h,

2. The tip of the tongue is lowered against the lower teeth; both sides of the front of the tongue are in contact with the opposite part of the hard palate, leaving a gap for the air passage which is wider than that for a denti-alveolar fricative. The back of the tongue is lowered.

3. The space between the jaws is very narrow; in fact, the teeth touch each other.

Phonetic Description:

This consonant is one of Resonance Group VII, i.e. it has an inherent front resonance, e.g. γʌmʌ3ʃɛ:cɪr

No palatogram has been taken of this consonant because of the interference of the ^{articulation} ~~utterance~~ following it in the junction (see the two junctions above).

Reference is made to kymogram

No. 30 - mʌ:fɪ:3zæjji h,

'ʃ'

Phonological symbol: 'ʃ'Definition of sound: A voiceless palatal fricative.Organic Description:

1. The lips are projecting even with an adjacent front vowel.

2. The tip of the tongue is lowered against the lower teeth; both sides of the front of the tongue are in contact with the two sides of the hard palate; this contact extends inwards at the front of the hard palate, as can be seen in all 'ʃ' palatograms (see pp. 53-55 of the palatograms) where this extension is always post-alveolar.

3. The space between the jaws is very narrow; the front teeth are touching.

Phonetic Description:

This consonant is one of Resonance Group VII; the resonance of this group is front and inherent in all phonetic contexts, e.g.

ʃɛ:f

ʃʊ:f

ʃi:b

ʃɜ:b

ʃo:f

ʃʊft

The tensivity and laxity of articulation of 'ʃ' is related to position, as can be seen in comparing the following palatograms:

ħaʃʃ - ħabaʃ - maʃʃɛ:ħ - ʃaʃʃɛ:b - ʃaʃʃa:b

and maʃɛ:ħ.

In "naʃʃ" (p.55), the bilateral wipe-off is wide and the inward extension covers from the first molar line on either side to well in front of the canine line. i.e. this inward extension ^{is} wholly post-alveolar and partly alveolar. It reaches inwards to half way between the median line and the left line on one side and between the median and the right line on the other. In "naʃʃ" (p.54), the inward extension in the post alveolar and the alveolar zones just exceeds the left and right lines not reaching as far in as in "naʃʃ". In "maʃʃɛ:ɰ" (p.55), the inward extension is only partly post-alveolar and partly alveolar, but is still more marked than in "ʃaʃʃɛ:b" (p.54). In "ʃaʃʃa:b" (p.53), there is hardly any extension on the right side; on the left, however, it ceases just beyond the left line between this and the median line in the post-alveolar zone. The bilateral wipe-off is markedly less than in the previous examples. In "maʃʃɛ:ɰ" (p.53), the inward-extension is more on the right of the post-alveolar zone than on the left; the wipe-off is not as clearly defined as in the other examples, especially in the lateral wipe-off on the left in the pre-palatal zone.

This gradual decrease of wipe-off from one position to the other correlates with a gradual increase in laxity of articulation from one position to another.

These conclusions can be supported by kymographic observations, for example, in:-

kymo. No. 57 - mahjũ:m

62 - řařa:r

where the excursion of 'j' is small.

'y'

Phonological symbol: 'y' , otherwise j in the junction

jy,

~~otherwise~~ x in the junction xy,

or c in the junction cy.

Definition of sound: A voiced velar fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The back of the tongue is raised against the velum; the front of the tongue descends so that the tip rests against the lower teeth.
3. The space between the jaws is wide.

This consonant gives no palatogram; even though the place of articulation of 'y' on the velum varies slightly from back to front, it is never so far front as to give a palatogram.

Phonetic Description:

This consonant is one of Resonance Group II. i.e. the resonance of 'y' is both inherent and back, e.g.

yalub - yadær - yajjer

This consonant is unvoiced before 'c' in junction, e.g.

balayce:mɪl

The laxity and tensity of the articulation of 'y' is according to position. This is to be found systematized

in the phonological section (p. 183). Reference can also be made to the kymograms below for comparison:

No. 28 - ʔafɣΔ:l

37 - ʔafɣΔ:nt:

49 - ɣΔmΔʔ

and 70 - lΔɣm

'x'

Phonological symbol: 'x', otherwise ʃ in the junction
 jx,

otherwise c in the junction cx,
 or otherwise ɣ in the junction ɣx.

Definition of sound: A voiceless velar fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The back of the tongue is raised against the velum. The front of the tongue slopes gradually to where the tip of the tongue rests against the lower teeth.
3. The space between the jaws is wide.

This consonant gives no palatograms; even though the place of articulation of 'x' varies on the velum from back to front as in 'ɣ', it is never so far forward as to give a palatogram.

Phonetic Description:

This consonant is one of Resonance Group II, i.e. the resonance of 'x' is both inherent and back, e.g.

xabar - xatəm - xajər.

Laxity and tensivity of 'x' are systematized in the phonological section (p. 183) Reference should be made to the following kymograms:

kymo. No. 75 - xarɔjɛttitmaʃʃɛ: ʌ

and 79 - fax²r.

'ɛ'

Phonological symbol: 'ɛ'Definition of sound: A voiced pharyngeal fricative.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The epiglottis projects towards the back pharyngeal wall, as can be seen in the X-Ray picture of the posture of 'ɛ'. Apart from this contact, or approximation to it, there is little difference between the size of the pharyngeal opening in this case and that at rest. (see X-Ray picture of position at rest).
3. The space between the jaws is wide, perhaps wider than with 'q' (c.f. the two pictures^{١٤٩}).

This consonant gives no palatogram.

Phonetic Description:

The 'ɛ' consonant is one of Resonance Group IV, i.e. it has a resonance that is described as medium, and can, according to the phonetic context, be:-

a) retracted or backish, when 'ɛ' is followed by an emphatic, e.g. ɛaʔab

b) localized or characteristic, when it is followed by a consonant of Groups II, III, IV or V, e.g.

ɛʌqal

ɛabad

ɛarɒf

or c) advanced or frontish, when 'ɛ' is followed by a consonant of Group VI or VII, e.g.

ɛadɤl

ɛaɟɛb

This consonant is glottalized in the following positions:

1. initial in the spoken group, e.g.

kymo. No. 4 - ʔɛaɟɟal

2. Double medial, e.g. baɛɛʔad

3. Final, single or double in S.G., e.g.

kymo. No. 17 - xaɟaɛʔ

and ɟɛɛɛʔ

Throughout this work, only final glottalization in the S.G. is symbolized, because it is the most striking according to perception.

'h'

Phonological symbol: 'h'Definition of sound: A voiceless pharyngeal fricative.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The epiglottis projects towards the back pharyngeal wall, almost touching it. Apart from this, the size of the pharyngeal opening is similar in this case to that at rest (c.f. X-Ray pictures of the posture of 'h' and that of rest).

3. The space between the jaws is wide, but less wide than with 'ɣ' and 'q' (c.f. the three pictures).

This consonant gives no palatogram.

Phonetic Description:

The 'h' consonant is one of Resonance Group IV, i.e. it can be:

a) retracted or backish, when followed by an emphatic,
e.g. ħaʔab

b) localized or characteristic, when followed by a consonant of Groups II, III, IV, or V, e.g.

ħaqaḏ

ħabaṣ

ħarḏm

c) advanced or frontish, when followed by a consonant of Group VI or VII, e.g. hadæf

 hajɛr

Intervocalic and pre-voiced 'h' in a junction is heard as a voiced pharyngeal creak, different from the glottal creak 'ɣ' and from the glottal friction 'h', as well as from the voiced pharyngeal fricative 'ɣ' , e.g.

kymo. No. 67 - lɒhd

 68 - mɒhɔ

Phonological symbol: 'h'

Definition of sound: A voiced glottal fricative.

Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. There is an amount of glottal constriction, less than necessary for normal sound.
3. The space between the jaws is wide, as wide as for 'h'.

Phonetic Description:

As this consonant is one of Resonance Group IV, its resonance can be:

1. retracted, i.e. backish, when it is followed by an emphatic, e.g. haqam

2. localized, i.e. characteristic, when it is followed by a consonant of Groups II, III, IV or V, e.g.

hawā:

haluc

3. advanced when followed by a consonant of Groups VI or VII, e.g. hadær - haʃem

When followed by ʔ in junction, this consonant is unvoiced, e.g. cærɒhha:mʔd

Otherwise, it is voiced, for example:-

kymo. No. 54 - ʒærɒhhum

56 - əhtæmm

and 60 - jifham

C. THE LIQUIDS

The term "liquid" is not used in the traditional sense found in phonetic literature. For our purpose, and in the sense it is used in this work, a liquid is a sound that is neither plosive nor fricative. This will include a variety of articulatory types such as:

1. nasal,
2. lateral,
3. rolled,
- and 4. semi-vowel.

Thus, the feature common to these articulations can best be negatively expressed, in that they are neither plosive nor fricative. A positive statement, that no pair of consonants in this division can be correlated by positive and negative voice would be phonological rather than phonetic in viewpoint.

The tensity and laxity of articulation in the liquid is based, as in the plosive and the fricative consonants, on position rather than sound. Beside being based on perception, such a statement on tensity and laxity can be supported by palatographic investigations of examples in which the liquids occur. For example, one can examine the following palatograms:

fann - ʒafan - nɔ:b - ʒaɦnɔ:b - ʒanʒa:m - manɔʒ.

In "fann" (p.36), the wipe-off on the left of the artificial palate starts between two points; the higher of these is above the canine line, i.e. in the post-alveolar zone, and the lower below the lateral incisor line; i.e. in the denti-alveolar zone. The wipe-off between these two points covers the alveolar zone. It descends gradually to the right with more or less the same width till the median line, where it broadens to cover all the denti-alveolar, and most of the alveolar zone, as far as the right line where it merges into the lateral wipe-off.

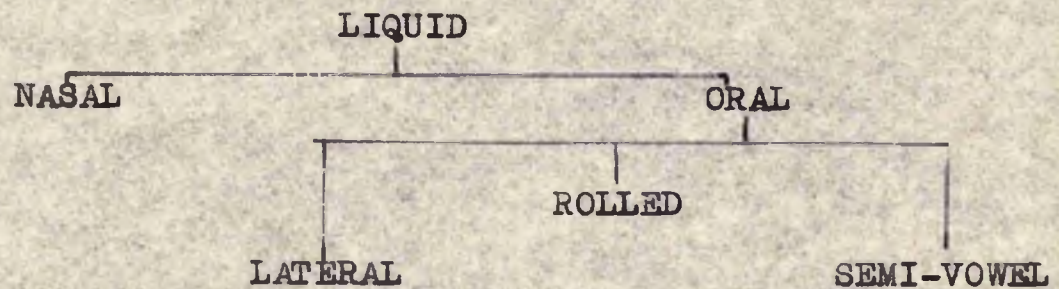
In "ɣafan" (p.35), the wipe-off starts on the left between two points; the posterior of these is not beyond the canine line, but the anterior lies exactly on the lateral incisor and not in front of it as is the case with "fann". This means that the width of the wipe-off here is less than in the first example. It continues lessening to the end of the wipe-off. In "nɔ:b" (p.33), the wipe-off is narrower still and is only within the alveolar zone.

In "ɣahnɔ:b" (p.35), the wipe-off has an undefined line. It can be said, however, that at the median line between it and the untouched area, it covers a distance between two points the higher of which is slightly above the lateral incisor line, and the lower half way between this line and the incisor line. In "ɣanɣa:m" (p.34), the wipe-off at the median line covers a distance between two points, the

posterior of which is nearer the lateral incisor than the canine lines and the anterior lies exactly on the lateral incisor line. In "mandɔ" (p.33), the wipe-off is discontinuous within the alveolar zone.

It can be seen that the area of the wipe-off decreases gradually from double final to intervocalic positions, a process that is systematized in the phonological section under tensity and laxity (p.183).

The following table illustrates the relations between the liquid types:



The Liquids in Detail

1. The Nasals.

'm'

Phonological symbol: 'm', otherwise 'b' in the junction
 'bm',
 and 'n' in the junction
 'nm'.

Definition of sound: A voiced bilabial nasal.

Organic Description:

1. The lips are closed.
2. The velum is lowered.
3. The space between the jaws is narrow, but the teeth are not touching.

This consonant gives no palatogram.

Phonetic Description:

The 'm' consonant is one of Resonance Group III; its resonance being:

1. retracted, i.e. backish, when 'm' is followed by an emphatic consonant, e.g. maʔar,
2. localized, i.e. characteristic, when it is followed by a consonant of Groups II, III, IV or V, e.g.

maqarr

maʔarr

marr.

3. advanced, i.e. frontish, when it is followed by a consonant of Groups VI or VII, e.g.

matæ:

maCER

The laxity of 'm' can be correlated to short duration in kymography, e.g. kymo. No. 83 - maSmü:ŋ.

'ɱ'

Phonological symbol: 'm' in the junction 'mf'
 'n' in the junction 'nf'.

Definition of sound: A voiced labio-dental nasal.

Organic Description:

1. The lower lip is in light contact with the upper teeth.
2. The velum is lowered.
3. The space between the jaws is medium, i.e. it is wider than with 'm'.

This consonant gives no palatogram.

Phonetic Description:

The 'ɱ' consonant is one of Resonance Group III, but it always has a localized resonance that is neither backish nor frontish, e.g.

maɱfu:x

jiɱfaɛ

ʔɱfa:t

'n'

Phonological symbol: 'n'Definition of sound: A voiced emphatic dental nasal.Organic Description:

1. The lips are neutrally shaped.
2. The tip of the tongue is in contact with the upper teeth. It hardly touches and sometimes does not touch the teeth ridge. The back of the tongue is raised and drawn back as in 'q'.
3. The velum is lowered.
4. The space between the jaws is narrow.

Since this consonant always occurs with a following 'q', this latter articulation would interfere with the wipe-off of 'n'. No palatogram is, therefore, given.

Phonetic Description:

This consonant is emphatic, i.e. it is one of Resonance Group I. Pharyngealization is thought to be the chief factor in this feature, e.g.

juṇḍaṛ

eṇḍamm

This consonant is always in an immediate junction with a following 'q', as the above examples show. It is not the nasal consonant of 'naḍar'. (see 'n')

'n'

Phonological symbol: 'n'Definition of sound: A voiced emphatic denti-alveolar nasal.Organic Description:

1. The lips are neutrally shaped.
2. The tip of the tongue may have one of two positions:
 - a) when the following consonant is 's', the tip of the tongue is held against the lower gum.
 - b) when this following consonant is 't', the tip of the tongue is held against the inner side of the upper teeth.

The front of the tongue is held against the alveolum in both cases. The back of the tongue is raised and drawn back towards the back pharyngeal wall; i.e. similar to 'n'; this is pharyngealized.

3. The space between the jaws is narrow.

This consonant is always followed by 's' or 't' which, in a palatogram, would interfere with the wipe-off of 'n'; thus no palatogram is given.

Phonetic Description:

It is one of Resonance Group I, i.e. emphatic. Its resonance is inherent and is a feature of the consonant in this particular position, e.g.

jinsah

jantuaq

It is not the nasal consonant in:

naṣaḥ

and naṭaḡ. (see n)

'n'

Phonological symbol: 'n'Definition of sound: A voiced denti-alveolar nasal.Organic Description:

1. The lips are neutrally shaped.
2. The tip of the tongue can be in one of two positions:
 - a) against the lower gum, when the following consonant is 's' or 'z'.
 - or
 - b) against the inside of the upper teeth, when the following consonant is 't' or 'd'.

In both cases, the front of the tongue is against the alveolum and the back of the tongue is lowered.

3. The space between the jaws is narrow.

This consonant is always followed by a denti-alveolar articulation, which, in a palatogram, would interfere with the wipe-off of 'n'.

Phonetic Description:

The 'n' consonant is one of Resonance Group VI, i.e. it has an inherent front resonance. It is always in immediate junction with a following denti-alveolar fricative or plosive, e.g.

jũnzul

jũnsyb

jũndyr

jũntyf

It is not the nasal consonant of

nozæl

nosæb

nodær

and notæf (see 'n').

'n'

Phonological symbol: 'n'Definition of sound: A voiced alveolar nasal.Organic Description:

1. The lips are neutrally shaped.
2. The tip and the front of the tongue are against the alveolum, and the soft palate is lowered.
3. The space between the jaws is narrow.

The alveolar character of 'n' articulation can be abstracted apart from perception, by palatography. This can be illustrated by palatograms such as:

ni:b - ʒani:f - ʒahni:hʊ^h - ʒami:n - ʒanni:hʊ^h

hinn - ʒinn.

and nɔ:b - manɔʒ^h - ʒanʒa:m - ʒanwa:ʒ^h - ʒab^hnɔ:b^h
 ʒahnɔ:b - ʒafan - ʒann.

This consonant does not occur with the back vowels, either half close or close.

Phonetic Description:

This consonant is one of Resonance Group V, i.e. its resonance can be either:

1. retracted, when followed by an emphatic consonant,
 e.g. naqar
 naʒah
 naʒaq

2. localized, when followed by a consonant of Groups II, III, IV or V, e.g.

naqal

nbaf

nhat

or 3. advanced, when followed by a consonant of Groups VI or VII, e.g.

nozæl

and ndʒeh

The tensivity and laxity of articulation of 'n' is connected with position rather than sound, as can be seen in examining the wipe-off in the following palatograms:

fann - gafan - nb:b - ʔahnb:b - ʔanga:m - manɔʔ

In "fann" (p.36), the wipe-off on the left of the artificial palate starts between two points, the posterior of which is beyond the canine line, i.e. in the post-alveolar zone, the ^{other} lower being anterior to the lateral incisor line, i.e. in the denti-alveolar zone. The wipe-off between these two points covers the alveolar zone. It descends gradually to the right at more or less the same width until the median line, where it broadens to cover all the denti-alveolar, and most of the alveolar, zone until it reaches the right line where it merges with the lateral wipe-off. In "gafan" (p.35), the wipe-off starts on the left between two points; the posterior is beyond the canine line, the anterior being

exactly on the lateral incisor line (in contrast to the case in "fAnn"). Thus the width of the wipe-off is less here than in the previous example. It continues to lessen in width to the end of the wipe-off. In "nɔ:b" (p.33), the wipe-off is narrower still and is totally within the alveolar zone. In "ʔaɦnɔ:b" (p.35), the wipe-off has an undefined line between it and the untouched area. It covers a distance between two points, the posterior of which is slightly beyond the lateral incisor line, and the anterior half-way between this line and the incisor line. In "ʔaŋa:m" (p.34), the wipe-off at the median line covers a distance between two points, the posterior of which is nearer the lateral incisor than the canine lines, whilst the anterior is exactly on the former line. In "ɦanɔɟ" (p.33), however, the wipe-off is a discontinuous line within the alveolar zone.

Each of the above examples shows a laxer articulation than its preceding example.

In kymography, tensivity and laxity of 'n' can be correlated to duration. A comparison can be made between the long duration of this consonant in:

kymo. No. 84 - jilɛabɸɦnɔ:r
 and the shorter in 71 - nɔsɟ
 the shorter still in 39 - jif²ɦnɪ:
 and the shortest in 34 - rɔfazzɜ:nɔb
 37 - ʔafɣa:ɦnɪ:
 51 - ɦabazzɜ:nɔb

'ŋ'

Phonological symbol: 'n'Definition of sound: A voiced post-alveolar nasal.Organic Description:

1. The lips are rounded: this consonant is always in junction with a back close or half-close vowel.

2. The tip of the tongue is in contact with the alveolum and with a part, sometimes, of the post alveolar area of articulation, sometimes with a certain amount of retroflexion.

3. The space between the jaws is medium.

Apart from perception, the post-alveolar character of 'ŋ' articulation can be examined in palatography, where in every case, a part of the wipe-off on both sides is post alveolar, for example, in palatograms such as:

ŋü:h - xunü:ɛ - mŋɛam - xu:ŋhɔm - mamŋü:h -

mamŋü:ɛ - xu:ŋ - mŋŋü: - mŋŋŋ.

Phonetic Description:

This consonant is one of Resonance Group V, i.e. its resonance is

1. retracted, when ŋ is followed by an emphatic consonant, e.g. qunɛ:t

2. localized, when it is followed by a consonant of Groups II, III, IV or V, e.g.

mŋɛɛm

3. advanced, when this consonant is followed by one of Groups VI or VII, e.g.

qurū:t

The laxity and tensivity of 'ŋ' articulation can also be examined palatographically. The following palatograms may be compared:

mūŋŋ - xu:ŋ - mūŋŋū: - ŋūh - mamŋū:ɛ^h - mūŋɛam -
xurū:ɛ^h

In "mūŋŋ" (p.36), it can be stated that on the left of the left line, the ŋ wipe-off covers the alveolar, post-alveolar and part of the pre-palatal zones. On the right of the right line, it covers the alveolar and the greater part of the post-alveolar zones. Between the left and the right lines, the wipe-off is alveolar, except for a small post-alveolar wipe-off on the right of the median line just over the meeting point of the canine and the right lines. In "xu:ŋ" (p.35), not all the alveolar zone is wiped-off, since there is an untouched area, the border of which runs somewhat parallel with and immediately over the lateral incisor line. In "mūŋŋū:" (p.36), the post-alveolar wipe-off is less in area than in either of the previous examples, and there is a narrow denti-alveolar wipe-off parallel with, and immediately below, the lateral incisor line. In "ŋū:h" (p.33), only a part of the alveolar, together with a smaller part of the denti-alveolar^{zones} are wiped-off; the area

of the wipe-off is still smaller than in any of the preceding examples. It is even less in "mamrū:ε⁵" (p.35). In "mūnεam" (p.34), at a point immediately right of the median line, the wipe-off is practically negligible, being still less in area than the preceding example. Similarly for "xurū:ε⁵" (p.33).

The gradual decrease in the size of the wipe-off is correlated to a gradual increase in the laxity of articulation of 'η'.

Final 'η' in the spoken group is partially unvoiced, see:
kymo. No. 83 - masmū:η.

'ɲ'

Phonological symbol: 'ɲ'Definition of sound: A voiced palatal nasal.Organic Description:

1. The lips are slightly spread.
2. The front of the tongue is in contact with the hard palate; the velum is lowered.
3. The space between the jaws is narrow.

Because this consonant is always followed by a palatal consonant in immediate junction with it, a palatogram is not reliable, since the following palatal articulation would interfere with the wipe-off of 'ɲ'.

Phonetic Description:

This consonant is one of Resonance Group VII, i.e. its resonance is both front and inherent, e.g.

ʃtɲɛcɛr

ʃtɲcɛtəb

ʃtɲɛrɒh

mɲcũ:b

mɲʃũ:ɾ

Before 'ʃ' in some pronunciations, this consonant sounds like a nasalized front vowel; that is, something like

mẽ:ʃũ:ɾ

'ŋ'

Phonological symbol: 'n'Definition of sound: A voiced velar nasal.Organic Description:

1. The lips are open, but neutrally shaped.
2. The back of the tongue is raised and the velum lowered, so that contact is established between the two.
3. The space between the jaws is wide.

This consonant gives no palatogram because its place of articulation lies behind the palatal area.

Phonetic Description:

This consonant is one of Resonance Group II, i.e. its resonance is back and inherent, e.g.

junxur

ŋɣa:b

baŋkaɖaɣi:fAʰ

maŋgaʈaʝʝibAʰ

'n'

Phonological symbol: 'n'Definition of sound: A voiced uvular nasal.Organic Description:

1. The lips are neutrally open.
2. The back of the tongue is raised and drawn back to touch and approximate the rearmost part of the velum and the back pharyngeal wall respectively. The velum is lowered, the articulatory process being related to that of 'q' (see X-Ray picture of 'q').
3. The space between the jaws is widest; equivalent to that of 'q'.

The 'n' consonant gives no palatogram, because its place of articulation lies behind the area of palatography.

Phonetic Description:

For reasons similar to those given for 'q', the classification of this consonant as uvular has been preferred to "buccal". This consonant is one of Resonance Group II, i.e. its resonance is back and inherent, e.g.

manqu:ɭ

junquɭ

ənqɔɭɒb

2. The Laterals

'ɭ'

Phonological symbol: 'ɭ'Definition of sound: A voiced emphatic dental lateral.Organic Description:

1. The lips are neutrally open.

2. The tongue position is similar to that of 'q' except that there is no lateral contact between the sides of the tongue and the molars as in 'q'

3. The space between the jaws is narrow.

Since this consonant is always followed by q in immediate junction, a palatogram would not be reliable, because of the interference of 'q'

Phonetic Description:

This consonant is one of Resonance Group I, i.e. its resonance is emphatic and inherent, e.g.

ɛʌmalɭa:ɭɪm

le:ɭɭalɔ:m

'l'
7Phonological symbol: 'l'Definition of sound: A voiced emphatic denti-alveolar lateral.Organic Description:

1. The lips are neutrally open.
2. The tip of the tongue touches the upper teeth and the front of the tongue covers much of the alveolum. The back of the tongue is raised and retracted towards the back pharyngeal wall.
3. The space between the jaws is narrow.

Because this consonant is invariably followed by 's' or 't' in an immediate junction, no palatogram of it is reliable.

Phonetic Description:

This consonant is one of Resonance Group I, i.e. its resonance is emphatic and inherent, e.g.

jul₇suqjul₇tufjil₇si:yal₇ta:n

It should be noted here that the symbol 'l' is used in the transcription of the isolated case of emphatic double 'll' in "ella:h".

'ɺ'

Phonological symbol: 'ɺ'Definition of sound: A voiced denti-alveolar lateral.Organic Description:

1. The lips are neutrally shaped.
2. The tip of the tongue is against the upper teeth and the front of the tongue against the alveolum. The back of the tongue is lowered.
3. The space between the jaws is narrow.

The 'ɺ' consonant is always followed by denti-alveolar articulation in an immediate junction. This latter articulation interferes with the wipe-off of 'ɺ'.

Phonetic Description:

This consonant is one of Resonance Group VI, its resonance being front and inherent, e.g.

jɺsæɹʲ

jɺzæm

fɺtæ,h,

ɹamɺdæ: jɺm

'l'

Phonological symbol: 'l'Definition of sound: A voiced velar lateral.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is against the alveolum.
3. The space between the jaws is medium.

The alveolar character of 'l' articulation can be examined in palatography when comparisons are made between the following palatograms:

li:f - ɛa:li:m - ɛali:m - ɛilmɪ₂,h - himli₂,h

mɪlli:m - ɛA:qil - fɪ:l - hɪll

lɔ:m - mɔlɔ:h - ɛalmɛɛ^h - ɛamɔ:h - mɔllɔh -

ɛamal - mall

Phonetic Description:

This consonant is one of Resonance Group V, with a resonance that can be:

1. retracted, when 'l' is followed by an emphatic,

e.g. laɪaɛ

2. localized, when it is followed by a consonant of

Groups II, III, IV or V, e.g.

laqaɪ

lobas

lɔɛan

3. advanced, when it is followed by a consonant of Groups VI or VII, e.g. lɒsæŋ

lɒjɛm

Apart from perception, the tensity and laxity of the 'l' articulation can be investigated by palatography. For this purpose, the following palatograms may be compared:

mɒll - ʃamɒl - mɒllɒh - lɒ:m - ʃamɒl: (h) - ʃalmæŋ,

mɒlɒ: (h)

In "mɒll" (p.41), the wipe-off on the left of the left line covers a distance of width between two points, the ^{posterior} higher of which is half way between the first and the second molar lines, and the ^{anterior} lower half-way between the canine and the lateral incisor lines. At the median line, the wipe-off occurs between the canine and a point a little ^{behind} above the lateral incisor lines. The patch found at the middle of of this wipe-off represents a defect in construction of the artificial palate. Right of the right line, it merges with the lateral wipe-off. The main character of the wipe-off is that it is alveolar. In "ʃamɒl" (p.40), the width of the start at the left of the left line is between a point a little above the first molar line and lower point at the canine line, with less width than for the previous example. The wipe-off is also alveolar. In "mɒllɒh" (p.39), the width at the extreme left is from the first molar line to a point just anterior the canine line; at the median line, the width

is from a point anterior the canine line and the lateral incisor line. The wipe-off is also alveolar. The wipe-off in "lp:m" (p.37) is partly alveolar and less post alveolar. The width of the wipe-off at the extreme left is between the first molar line and a point just below the canine line. At the median line, this is between two points one of which is just above the canine line, and the other half-way between this line and the lateral incisor line. In "ʕamlp:h" (p.39), the area is even less, as is also the case with "ʕalmʕɛʃ" (p.38). In "malp:h" (p.38), the area of wipe-off is full of untouched patches. This latter articulation is laxest.

The laxity is correlated to short duration and vice-versa in kymography. Compare the following examples:

Kymo. Nos. 13 - qʌbaqtʌlp:tʌh

35 - ʒerɒhɛali:

with Kymo. Nos. 5 - ʕacɛl

18 - faqʕl

28 - ʕaʃɣʌ:l

73 - ɛʌqʕl

In the last four examples, 'l' final in the spoken group, is partially unvoiced.

'ɭ'

Phonological symbol: 'ɭ'Definition of sound: A voiced post-alveolar lateral.Organic Description:

1. The lips are rounded.
2. The tip of the tongue is against an area that is alveolar and post-alveolar (see palatograms), sometimes with an appreciable amount of retroflexion.
3. The space between the jaws is medium.

Both the post-alveolar character and the retroflexion of 'ɭ' can be abstracted from palatograms, such as:

ɭɤ:m - ɤʌɭɤ:f - ɤʌɭɤ:m - mɯɭhɒq - mɒmɭɤ:h - bɯɭɭɤ:h -
mɒɤɭɤ:f - fɯ:ɭhɒm - fɯ:ɭ - bɯɭɭɤ:h - fɯɭɭ

Phonetic Description:

This consonant is one of Resonance Group V, i.e. with a resonance that can be:

1. retracted, when ɪt is followed by an emphatic consonant, e.g. ɭɒtɪf
2. localized, when it is followed by a consonant of Groups II, III, IV or V, e.g. ɭɯhɒ:m
ɤʌɭɤ:m
3. advanced, when it is followed by a consonant of Groups VI or VII, e.g. ɭɤzɒ:m
mɯɭcɯ h

The tensity and laxity of 'l' articulation can be abstracted from palatograms. For this purpose, the following palatograms may be examined:

fūll - fū:l - būllū:h - lū:m - mamlū:h - mūlhāq -
 ɣulū:m, in that order.

In "fūll" (p.41), the articulation is retroflex. At the extreme left, the width of the wipe-off is between two points the higher of which is above the second molar line and the lower above the canine line, covering parts of the post-alveolar, pre-palatal and some of the mid-palatal zones. Retroflexion is shown by the shape of the wipe-off between the left and the right lines, in contrast with that of "mall" (p.41). In "fū:l" (p.40), also, a retroflex articulation, both the post-alveolar and the mid-palatal wipe-offs on the left are less in area than in the first example. The retroflex 'll' of "būllū:h" (p.39), has no mid-palatal wipe-off at the left; at the median line, the wipe-off is only post-alveolar, not only at the median line, but also between the left and the right lines in general. In "mamlū:h" (p.39), though the wipe-off is more alveolar than post-alveolar, a slight retroflexion can be deduced from the palatogram. The size of the wipe-off is less than in "lū:m". The wipe-off in "mūlhāq" (p.38), is post-alveolar and the articulation is retroflex; there is also a small area of pre-palatal wipe-off on the extreme left; that on the right merges with the

lateral wipe-off. Perhaps the laxest articulation of all is that of "ɣulʃ:m" (p.38) in the wipe-off of which there are scattered untouched patches.

When 'ɭ' is final in the spoken group, it is partially unvoiced, see e.g. Kymo. No. 22 - mɔfcʊ:ɭ

3. The Rolled.

'r'

Phonological symbol: 'r'Definition of sound: A voiced alveolar rolled.Organic Description:

1. The lips are shaped according to the adjacent vowel.
2. The tip of the tongue is made to tap once or more against the alveolum, according to the position in the spoken group. Only in the latter case is the sound termed "rolled".
3. The space between the jaws is medium.

The alveolar character of the 'r' articulation can be examined palatographically; for example, by comparing palatograms such as:

ri:h - yari:q - müri:h - firqa(h) - yirba:q -

muyri:h - bi:r.

ro:h - waro:h - ha:rob - harom - marbu:m - farha(h)

hamro:(h)

Phonetic Description:

This consonant is one of Resonance Group V, i.e. its resonance can be:

1. retracted, when 'r' is followed by an emphatic consonant, e.g. raqa:(h)

2. localized, when it is followed by a consonant of Groups II, III, IV or V, e.g. roham

roba(h)

raqad

3. advanced, when it is followed by a consonant of Group VI or VII, e.g. *rdceɓ*

rdʃɛh

The tensity and laxity of articulation of 'r' can also be examined by comparing palatograms such as

rd:h - *hamrd:ɥ* - *farha ɥ* - *ha:rɒb*, in that order.

In "*rd:h*" (p.42), even though there is no wipe-off in the alveolar zone (because 'r' initial in the syllable is tapped only once), the post alveolar wipe-off on both sides of the artificial palate is appreciably tenser than in "*hamrd:ɥ*" (p.45), which has a certain amount of alveolar wipe-off mainly left of the left line and right of the median line. Between the left and the median line, there is only the slightest indication of touching. This indication is not found in "*farha ɥ*" (p.44), where the wipe-off on the left is far removed from the left line. In "*ha:rɒb*" (p.43), however, there is no appreciable wipe-off whatsoever. All that appears are some spots touched by the ^{finger} figure and situated outside the area for the 'r' contact.

This gradual decrease in the size of wipe-off correlates with an increase of laxity of articulation in pronouncing 'r'.

Intervocalic 'r' is very short in duration. This is correlated in kymography to a very short irregular wave-form; see, e.g. kymo. No. 10 - *səraqcits:b*

35 - *jerɒhɛali:*

kymo. No. 75 - xarojet titmaſſe:ʰ
as compared with -

6 - etſasær

29 - ſaſſe:r

61 - ſabtær

62 - ſaſſa:r

74 - qaſʰr

76 - haſʰr

77 - baʰr

78 - faqʰr

79 - faxʰr

and 84 - jilſabʰinnɔ:r

in all of which final 'r' is unvoiced.

'r'

Phonological symbol: 'r'Definition of sound: A voiced post-alveolar rolled.Organic Description:

1. The lips are rounded.
2. The tip of the tongue is tapped or rolled against the back of the alveolum.
3. The space between the jaws is medium.

The post-alveolar character of 'r' articulation can be examined by comparing the palatograms:

ʀü:h - quʀü:h - huʀü:b - huʀma_(h) - būʀma_(h)
 qab^əʀü_(h) - maħʀü:m - zu:ʀ - müʀʀ

Phonetic Description:

This consonant is one of Resonance Group V, i.e. its resonance can be:

1. retracted, when 'r' is followed by an emphatic consonant, e.g. ʀaʀa:b_(h)
2. localized, when it is followed by a consonant of Groups II, III, IV or V, e.g.

fūʀqa_(h)

3. advanced, when it is followed by a consonant of Groups VI or VII, e.g.

fūʀʃe_(h)

The tensity and laxity of articulation of 'r' can be investigated, beside perception, by comparing palatograms

such as:

mũɾɾ - ɛu:ɾ - ɾü:h - mahɾü:m - hupma,h and hupü:b,
in this order.

The wipe-off in "mũɾɾ" (p.45), starts on the extreme left at a width between two points, the posterior of which is mid-palatal and the anterior post-alveolar. This left wipe-off ends at the left line just anterior to the canine line, i.e. in the alveolar zone. On the right, the wipe-off stops half-way between the right and the median lines in the alveolar zone. Compared with "ɛu:ɾ" (p.45), this wipe-off on the right side is much larger in area. In the second example, the wipe-off is discontinuous. In "ɾü:h" (p.42), there is no alveolar wipe-off; in this case it is bilateral and stops short of the left and right line on either side of the post-alveolar zone. In "mahɾü:m" (p.45), there are two slight touches just posterior to the canine line; one is left of the left and the other right of the right line; the post-alveolar and alveolar wipe-off of the parallel example of "qabəɾü,h" (p.44), is more marked than that of "hupma,h" (p.44), and this, in its turn, more marked than the wipe-off of the laxest articulation in "hupü:b" (p.43).

Final 'ɾ' in the spoken group is partially unvoiced,

e.g. kymo. No. 12 - maɟəbü:ɾ

4. The Semi-Vowels

'w'

Phonological symbol: 'w'Definition of sound: A voiced bilabial semi-vowel.Organic Description:

1. The lips are rounded to a degree less than that for a long back close vowel.
2. The back of the tongue is raised also to a degree less than that for a long back close vowel.
3. The space between the jaws is medium.

This consonant gives no palatogram.

Phonetic Description:

The 'w' semi-vowel is one of the consonants of Resonance Group III, which may be:

1. retracted, when 'w' is followed by an emphatic consonant, e.g. mawɣa:ɭ
2. localized, when it is followed by a consonant of Groups II, III, IV or V, e.g. mawɣu:d
3. advanced, when 'w' is followed by a consonant of Groups VI or VII, e.g. mawɣʊ:d

'j'

Phonological symbol: 'j'Definition of sound: A voiced palatal semi-vowel.Organic Description:

1. The lips are slightly spread.
2. The front of the tongue is approaching the hard palate, but not as closely as for the long front close vowels. The wipe-off in 'j' palatograms is invariably bilateral which varies in width according to position with a possible inward extension in the back palatal zone.
3. The space between the jaws is narrow.

Phonetic Description:

This consonant is one of Group VII of resonance; it has a front inherent resonance in every phonetic context,

e.g. haje:h qa:ji:d $\text{quj\ddot{u}:d}$
 $\text{r\ddot{o}fj\ddot{z}:n}$ $\text{j\ddot{o}:m}$ $\text{\text{S}a\text{E}j\text{e}:d}$

The tensity and laxity of articulation of 'j' is also related to position rather than to sound. This can be abstracted from the wipe-offs of the following palatograms:

$\text{w\text{A}Ej}$ - $\text{\text{E}ajj\text{e}b}$ - $\text{\text{S}amj\text{e}\text{E}^{\text{S}}}$ - $\text{\text{S}ajf\text{A}\text{E}^{\text{S}}}$

In " $\text{w\text{A}Ej}$ " (p.57), the bilateral wipe-off is wide with an inward extension in the back palatal zone that reaches half-way between the left and the median line on the left and the right and the median line on the right. The

bilateral wipe-off covers, from back to front, a distance from the back palatal to the fore part of the alveolar zone. In "ɛajjɛb" (p.57), the bilateral wipe-off is narrow, but reaches as far front as the denti-alveolar zone on the left and the alveolar zone on the right. In "ɛamjɛɛɔ" (p.56), it is narrower still and reaches as far front as the denti-alveolar zone on the right and the alveolar zone on the left. In "ɛajfɛɛɔ" (p.56), it reaches the pre-palatal zone on the left and the post-alveolar zone on the right. This gradual decrease in the size of wipe-off is related to a gradual increase of laxity.

In kymography, intervocalic 'j', and sometimes pre- and post-consonantal 'j' as well, is not clear in tracings from the neighbouring vowels, e.g.

kymo. No. 24 - ɔa:jaqɛaxu:h

41 - ɛafjɛd

In the kymo. No. 84 - jilɛaɸfɪnnɔ:r , 'j' is nasalized.

CHAPTER XI.

The Vowels .

- - -

THE VOWELS

The classification of Vowels.

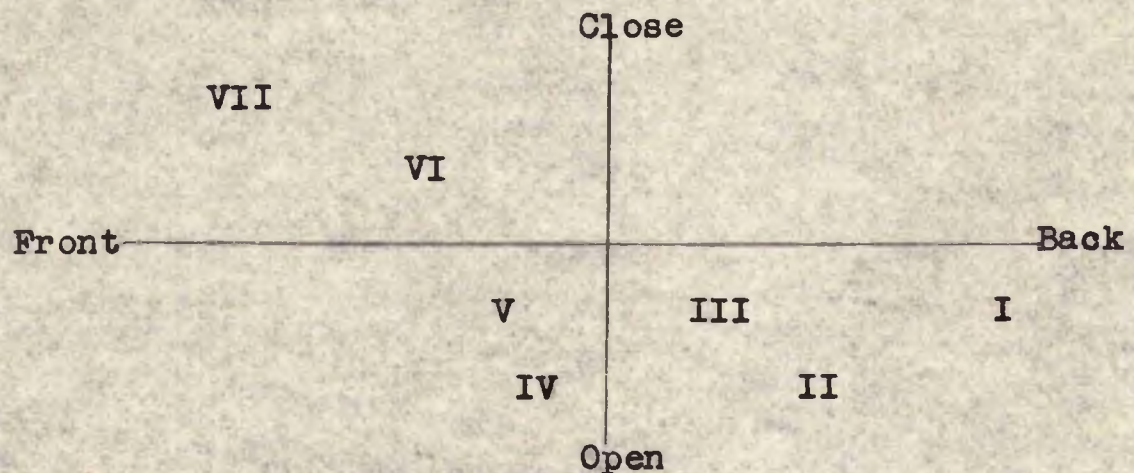
The phonetic vowel qualities of A.D. are a function of their place in the continuum in relation to the preceding or the following consonant. The vowels are looked upon in this work as a part of the general resonance of the syllable, i.e. together with the adjacent consonant a vowel fits into a resonance that can be described as back, medium or front. Since this resonance is common to both consonant and vowel in the syllable, a relation, on a resonance basis, has necessarily been established between the consonantal and the vowel framework. Corresponding to the grouping of consonants according to resonance is a grouping of vowels which can be tabulated as follows:

Description	Short or Long	Back Resonance		Medium Resonance			Front Resonance	
		Group I	Group II	Group III	Group IV	Group V	Group VI	Group VII
The Front-close vowels	S.	i	ɪ	ʏ	ɪ	i	ɪ	i
	L.	i:	ɪ:	ʏ:	ɪ:	i:	ɪ:	i:
The Front Half-close vowels	L.	e:	e:	e:	e:	ɜ:	ɜ:	ɜ:
The open vowels	S.	a	ʌ	ʌ	a	ɒ	æ	ɛ
	L.	a:	ʌ:	ʌ:	a:	ɒ:	æ:	ɛ:
The Back Half-close vowels	L.	ə:	ɔ:	ɔ:	ɔ:	o:	o:	o:
The Back-close vowels	S.	u	u	ü	u	ü	u	ü
	L.	u:	u:	ü:	u:	ü:	u:	ü:

The seven vertical groups are expressions of positions within the framework of horizontal associations between the vowels. These horizontal associations are expressed here by the terms front-close, front half-close, open, back half-close and back close and in the phonological section by the terms "cāsrā", "ṣāfṣā", "fāthā", "rāfṣā" and "qāmmā".

The vowels of Group I are pharyngealized, and therefore, have maximum of backness. Those of Groups II and IV have maximum of openness with a difference between the two groups of a back-front order; Group II is further back. The vowels of Groups III and V have no maximums of any dimension as will be seen on the diagram below; the former is further back than the latter. Groups VI and VII are fronted and closer, but seven has maximum of frontness and closeness within every horizontal association, or to use the phonological term, within every vowel-unit.

Diagrammatically, the above statement of the groups can be represented as follows:



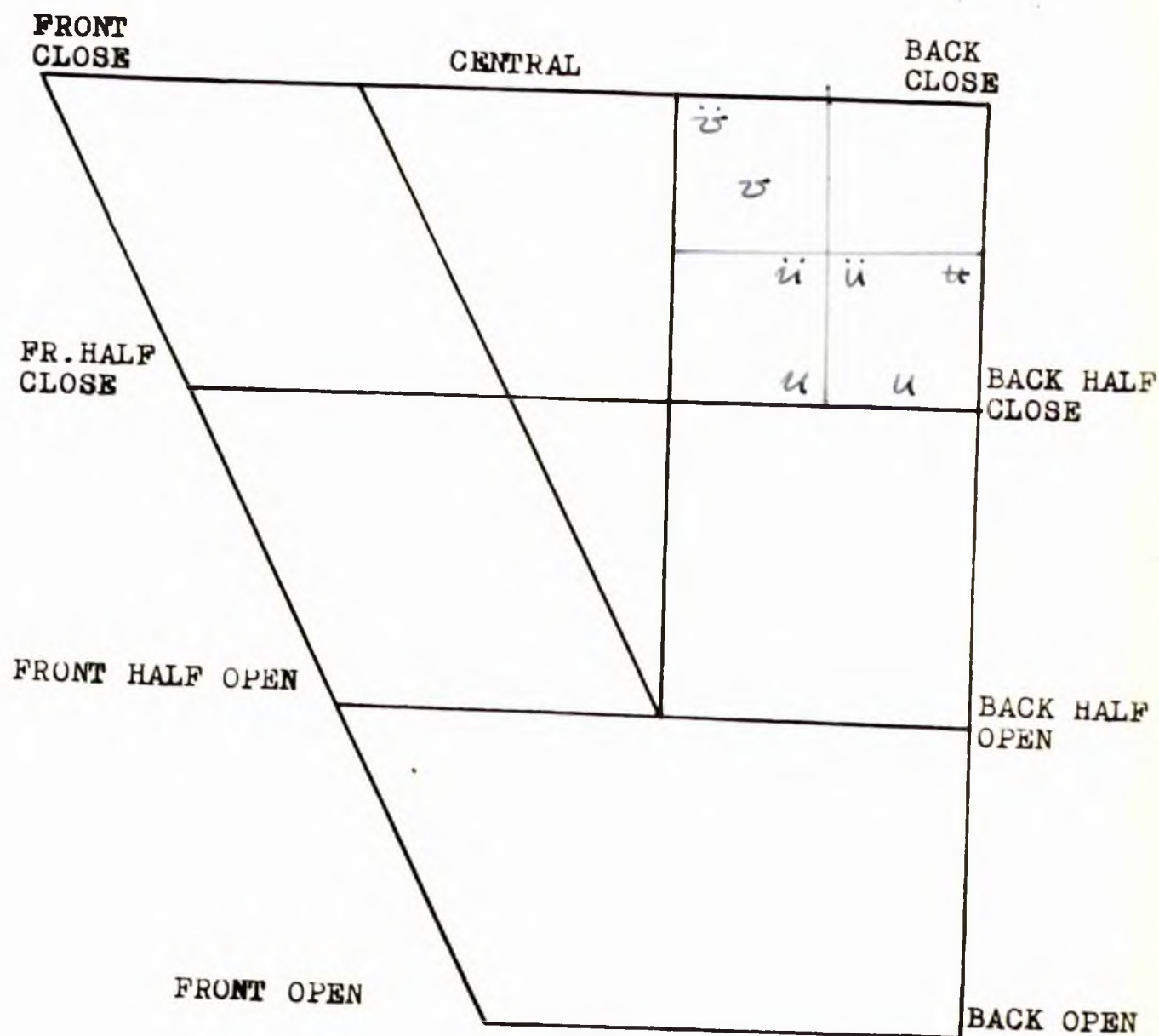
This diagram as a whole covers the position of each of the seven variants associated with one and the same unit. It can be superimposed on any of the five areas on the vowel figure where the variants of a single unit are situated. The variants will be situated in this area in a similar arrangement to that of the above diagram.

To illustrate this point, the short variants of the unit "qamma" are accordingly arranged on the vowel figure as can be seen on the following page.

In the organic sense, the diagram represents an area above the tongue at its position of rest; an articulatory area within which there are seven possible positions for the highest point of the tongue in pronouncing a vowel. This diagram, as has been seen above, can be applied in the diagrammatic sense to the vowel figure, and in the organic sense to the configurations of the mouth.

The grouping of vowels is parallel to the grouping of consonants. At this juncture it should be stated that there are associations between each group of vowels with its corresponding group of consonants. This association of every group to a corresponding one can be summed up as follows:

1. A consonant of Group I is always preceded and followed by a vowel of Group I, e.g. baṭal.



2. A consonant of Group II_h is always preceded and followed by a vowel of Group II, e.g. naqal

3. A consonant of Group III is followed by a vowel of Group III, e.g. ʕamal

4. A consonant of Group IV is followed by a vowel of Group IV, e.g. ʕasæl - sʕʕal

5. A consonant of Group V is followed by a vowel of Group V, e.g. xalɒl

6. A consonant of Group VI is followed by a vowel of Group VI, e.g. qatʕl

7. A consonant of Group VII is followed by a vowel of Group VII, e.g. xʕʕl

This statement of associations is very important because it expresses, besides resonance, the sum of symbolic sequences in the phonetic transcription of A.D. It is the background of every phonetic transcription in the thesis. It will be noticed that

a) Groups I and II of consonants are preceded and followed by Groups I and II of vowels respectively.

b) Groups III, IV, V, VI and VII of consonants are only followed by their respective groups of vowels when they are not followed by consonants of Groups I and II in immediate succession; for example, 'b' is followed by 'ʕ' in the following examples: baʕad

baɒl

baɖəɭ

baɖɛt

but not in baqar

or baɟar

where intervocalic 'q' of Group II is preceded and followed by 'ʌ' , and intervocalic 'ɟ' of Group I is preceded and followed by 'a' . This is the idea behind the sequence of symbols in the phonetic transcription of the Aden dialect.

There is also a number of central vowels which have no place in the system. These vowels, though different in quality within the central area, are all transcribed 'ə', with the difference expressed by the place of this in relation to the other symbols in the line. To illustrate this point, the following should be stated:

There are two types of central vowels outside the system.

a) The vowel of the VC syllable initial in the word (see p. 141).

and b) The anaptyctic vowel found in specific consonantal functions (see p. 170).

The former is found in the definite article 'əl' and in some verbal forms (see pp. 55-57), e.g.

əlbaɭɒɖ

əɭɭaɭɒɖ

əɭtəraɖq

əɭtəsaɖ

əɭtaɣat

əɭɭalaɖ

As can be seen in these examples, the 'ə' symbolizing the 'VC' vowel, as it is called, is put at the same level with the other systemic symbols.

The latter type comprises three variants each of which is further back or front, within the central area, from the others. There is some relation of harmony between each of these and the preceding systemic vowel. To illustrate this, the following symbols may be used.

qɪb^ɪlɒ,h, - qʌb^əlɒ,h, - qu^ub^ulɒ,h,

But the three small symbols above are not to be used in transcription; what is used is (^ə) higher above the line and above the level of the systemic symbols in the sequence. Thus, the above examples should, for practical purposes, be transcribed as follows:

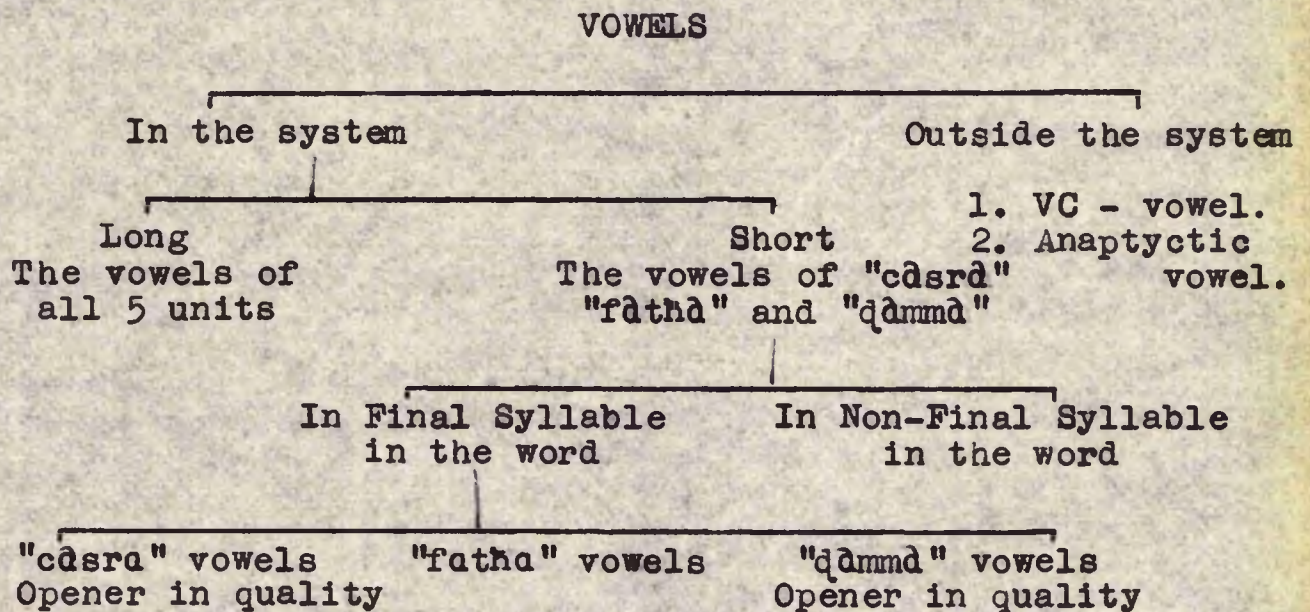
qɪb^əlɒ,h, - qʌb^əlɒ,h, - qu^əb^əlɒ,h,

Short back-close and front-close vowels in final cv , cvc and cvcc in the word are opener in quality than the vowels of these syllables when non-final in the word. They are as opener as to approach a point between half-open and half-close. This will be represented by (ɐ) under the vowel symbol (see p.174), e.g.

ɛʌ:qɪl - jɪhsɪb - jʊdxuɪ - jʊɛbɪd

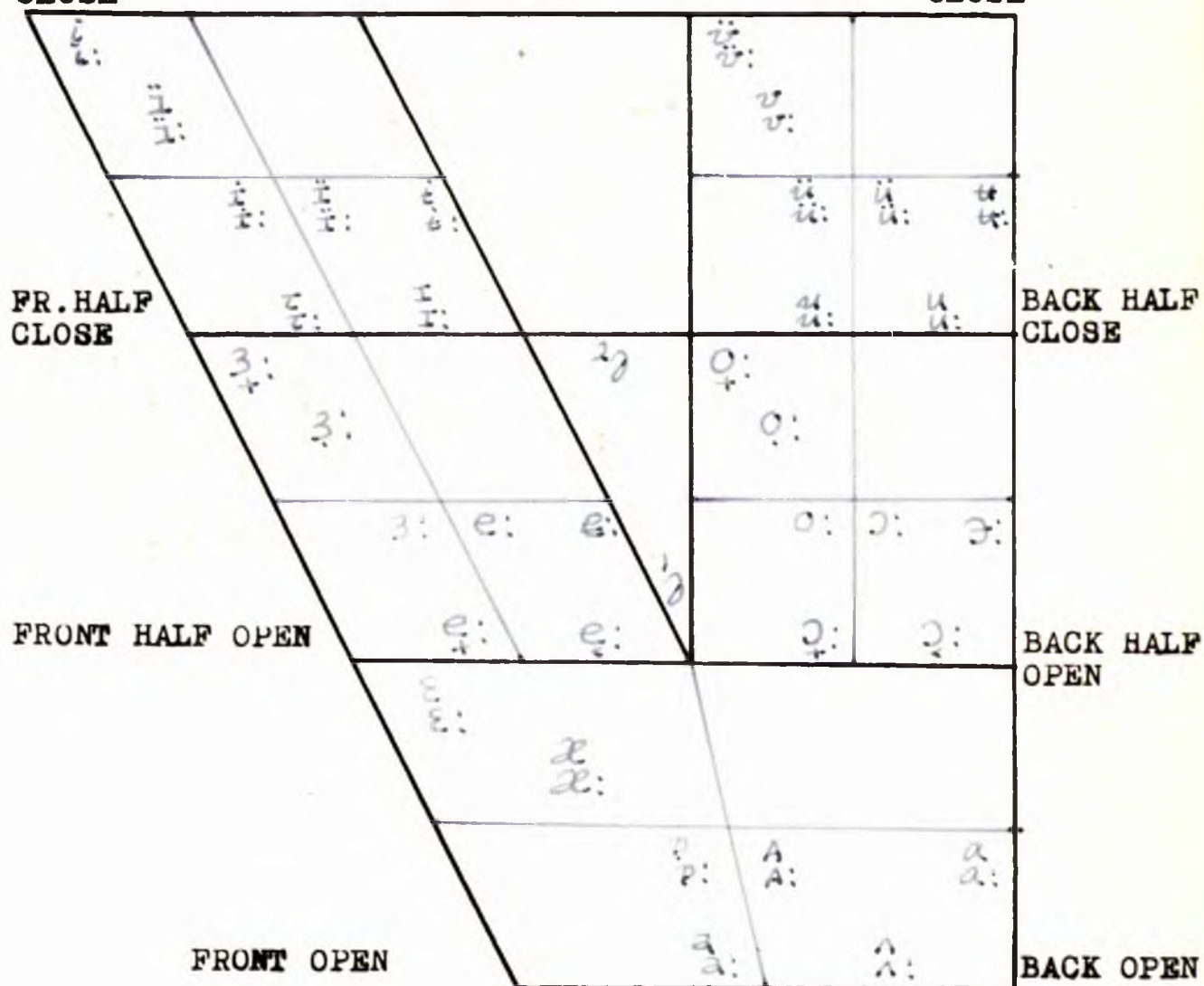
The reason for the dot in (ɐ) is to differentiate between this and the diacritical mark in 'e' and 'ə' of Group II of vowels (see table p.364).

The relationship between the vowels in and outside the system may be tabularized as follows:



After this short survey of the vowels in general, it is felt necessary to draw a collective vowel-figure on which the A.D. vowels in detail are diagrammatically related. The five quadrangular areas of the vowel figure will accommodate the vowels of one unit each, and the triangle of the central area, the two central types given the symbols 'e for the VC vowel and 'ē for the anaptyctic vowel. The e is not really a symbol of one quality but of a number of qualities associated, for practical purposes, with one symbol as has been stated above. It will be found that the diagram of seven groups of vowels discussed above is superimposed, in the vowel distribution of every unit, on the five quadrangles of the vowel-figure. The collective vowel-figure of A.D. vowels is as on the following page.

BACK
CLOSE



It will be observed here that long and short vowels are very closely situated on the vowel figure. In perception the difference between the long and the short of every variant is not greatly appreciable.

No vowel gives a palatogram except the front close and the front half-close vowels.

In final *cvv* syllable in the spoken group, the front close vowels give a characteristic wipe-off extended wholly or partially across the back palatal zone, in a similar manner to some of the palatograms of the palatal plosives. When the articulation accompanying this final vowel is denti-alveolar or alveolar, then all that will be left untouched of the artificial palate is an island shape between the third molar and the lateral incisor lines and between the left and the right lines. For reference, see the following palatograms:

maq̌q̌i: - qa:q̌i: - haq̌q̌i: - mux̌ťi: - muɣ̌ťi: -
 xǎťťi: - ɬaɣ̌ťi: - bǔťťi: - ɬaw̌ši: - qǔsši: - hǎbb̌i: -
 ɣǔff̌i: - ɬam̌hi: - haňti: - ɣaňti: - m̌f̌nňti: -
 maňti: - m̌f̌nňti: - ɬam̌ri: - ɣum̌ri: - ɬab̌zi: - bǐtti: -
 bǔǰji: - ɬam̌ji: - bǔǰji:

(pp. 58 - 62 of the appendix of palatograms).

This wipe-off is a result of a closer tongue position than that of the vowels in other positions as these

palatograms can be compared with others such as:

dɪ:f (p.1)	ri:h (p.42)
tɪ:b (p.5)	zi:h (p.28)
sɪ:b (p.10)	ti:h (p.14)
ni:b (p.33)	ji:m (p.49)
	and ʃi:b (p.53)

The tongue position of the close vowel in final position is also closer than consonantal 'j' in palatograms like:

ɛamjɛɛʳ (p.56)	ɛabjɛ:m (p.57)
ɛajfɛʳ (p.56)	mɛjʊ:b (p.57)
jɔ:mʊʳ (p.56)	
ɛujʊ:b (p.56)	

and even than double 'jj' in the palatogram

ɛajjɛb (p.57).

This closer tongue position represents a latter phase of the close vowel articulation, since this vowel is diphthongized. The back palatal wipe-off across the palatogram is not a wipe-off of swallowing, because it has been found that swallowing produces a complete wipe-off of the artificial palate, not allowing such untouched areas to appear in the middle of the palatogram.

The final back close vowels in cvv is also diphthongized, but because these give no palatograms, such statement can only be given as a result of perception.

The following general articulatory remarks should be noted:

1. The lips are:

- a) spread with the front close vowels,
- b) slightly spread with the front half-close vowels,
- c) neutrally shaped with the open vowels,
- d) slightly rounded with the back half-close vowels,
- and e) rounded with the back close vowels.

2. The space between the jaws is:

- a) widest with vowels of Resonance Groups II and IV,
- b) medium with vowels of Resonance Groups I, III and V,
- c) narrowest with vowels of Resonance Groups VI and VII.

The highest point of the tongue is:

- a) highest with vowels of Resonance Groups VI and VII,
- b) mid- with vowels of Resonance Groups I, III and V,
- c) lowest with vowels of Resonance Groups II and IV.

All vowels are:

- 1. nasalized when preceded, and especially when they are followed, by a nasal, see kymos. No. 80 - 93.

2. aspirated in final cv or cvv syllables in the spoken group, when this latter is not spoken on a rising tune or with emphasis, see kymo. No. 2 - ʕaḏḏa

3. glottalized in final cv or cvv syllables, in the spoken group with a rising tune or emphasis.

There are no diphthongs in A.D., (see the study of the vowel system, pp. 118-129).

The front-close vowels.

	Short	Long
<u>Phonological symbols:</u>	i	ii
<u>Phonetic symbols:</u>		
1. Preceding and following an emphatic	ɪ	ɪ:
2. Preceding and following Group II	ɪ	ɪ:
3. Following a consonant of Group III	ɪ	ɪ:
4. Following a consonant of Group IV	ɪ	ɪ:
5. Following a consonant of Group V	ɪ	ɪ:
6. Following a consonant of Group VI	ɪ	ɪ:
7. Following a consonant of Group VII	ɪ	ɪ:

The term front-close expresses an organic affinity between one and another of these vowels; it denotes a type of tongue position common to all these with difference of degree of frontness and closeness, which will be discussed below. The short and long variants of each pair above are associated by 1. a common resonance, and 2. an association with a specific consonantal Group, also on bases of resonance.

In the chart (p. 364), it can be seen that every front close vowel falls into two orders. One is organic and the other resonance-order. According to the former,

ɪ:, for example, is one of the horizontal order:

ɪ: , ɪ: , ɪ: , ɪ: , ɪ: , ɪ: and ɪ: ,

but according to the latter, it is one of the vertical

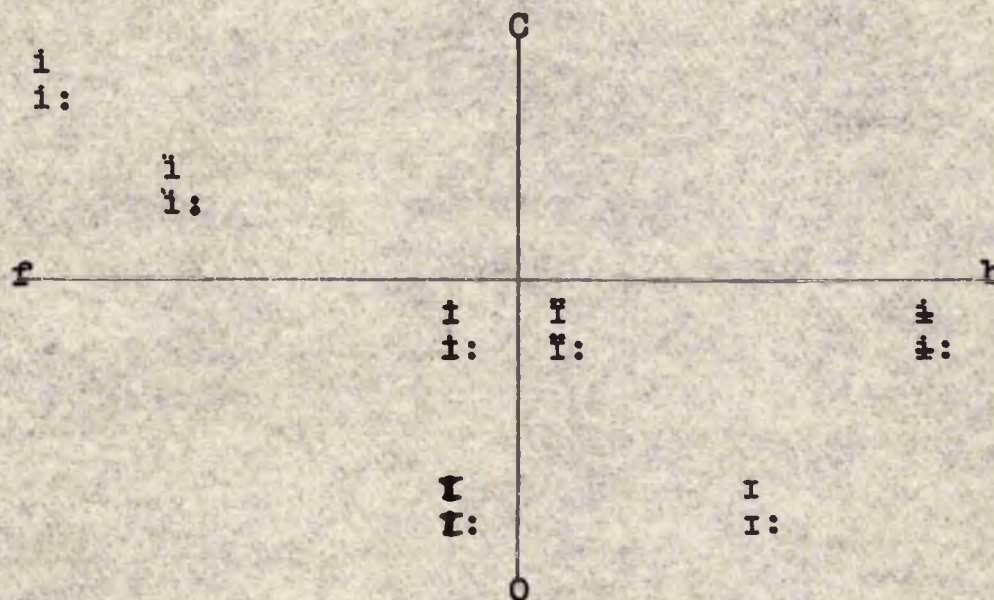
order ɪ: , e: , a: , ə: and ʊ: , all of which are

pharyngealized and occur with the emphatic consonants. A

diagrammatic arrangement of the relation of the front close

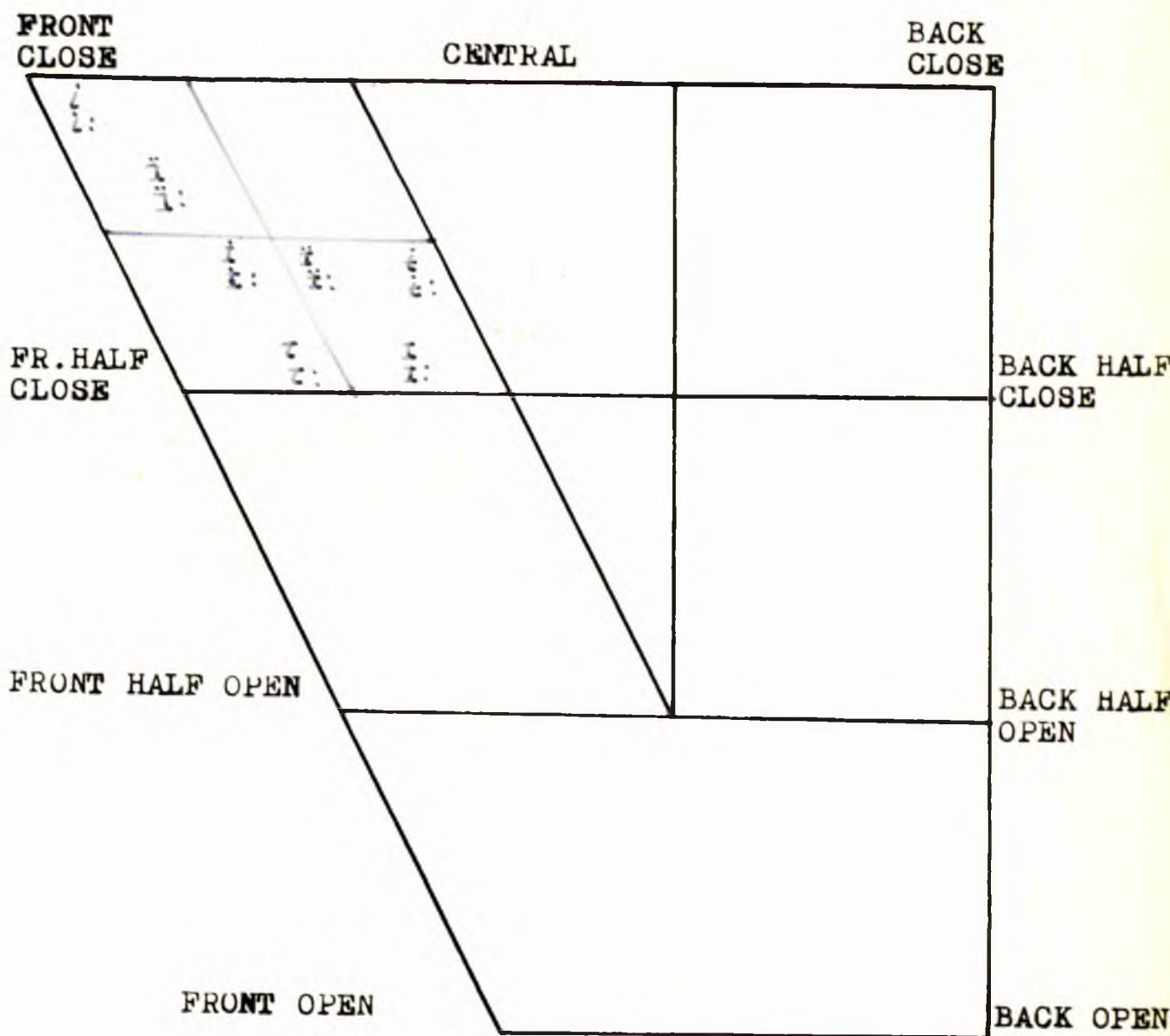
vowels and their positions in relation to each other, is as

can be seen below:



The front-close vowels cover an area on the vowel figure between close and half-close. When the above diagram is superimposed on the vowel figure, the front close vowels will be placed on the figure as on the following page.

Short and long 'ɪ' and 'ɪ:' are pharyngealized and occur before and after an emphatic consonant. These two vowels have a maximum of backness in relation to the front close vowels, i.e. the highest point of the tongue



The Front Close Vowels.

with these is further back than with any other front close vowel, e.g.

tɪbʌ:ɛaʰ,

sɪno:ɛaʰ,

jɪɣdɪbɰum

jɪtɛim

jɪsɪf

jɪdɰar

tɪ:b

sɪ:b

dɪ:f

xʌbɪ:t

rʌxɪ:s

ɛʌrɪ:d

The vowels ɪ , ɪ: , ɛ and ɛ: have a maximum of openness, also in relation to the front close vowels (not to the vowel figure as a whole), i.e. these have the widest space between the jaws, e.g.

qɪbʰlɔʰ,

xɪbʰrɔʰ,

ɛɛbʰrɔʰ,

hɪbʌ:l

ɛɛhsæ:n

qɪ:mʌʰ,

ɣɪ:rɔʰ,

hɛ:lɔʰ,

ɛɛ:mʌ:n

rɔhɛ:ndʰ,

The vowels ɪ , ɪ: , ɪ and ɪ: are nearest the centre of the area of the front close vowels, and have no maximum of any dimension, e.g.

mɪnnɪ:

bɪntæc

fɪ:büʰ,

nɪlɛab

hʌ:rɪbɰum

lɪ:f

The vowels ɪ , ɪ: , ɪ and ɪ: are closest and furthest front, but ɪ and ɪ: have a maximum of closeness

and frontness, e.g.

tilɣab	jilɣab
d̪iɟe:r	cilm ^h
s̪i:bū	ɟi:m
zi:roc	ɟi:b

The short front close vowels in cv , cvc or cvcc final in the spoken group have opener quality than they have in other positions; this quality even reaches between half-open and half-close, e.g.

da:ri _ɟ b	sa:b ^h i _ɟ	ha:ɟi _ɟ d
da:h _ɟ i _ɟ c	qa:ti _ɟ l	ha:q _ɟ i _ɟ r
b ^h i _ɟ nti _ɟ ^h	ɟumr _ɟ i _ɟ ^h	ɟer ^h i _ɟ ^h
b ^h i _ɟ nt	ɟilm	ɟinn

The long front close vowels in final cvv in the spoken group are diphthongized as has been stated in the general survey of the vowels, and here the following palatograms may again be referred to as evidence of the closer tongue position of the front close vowels in this position, e.g.

maqd̪i:	(p.58)	ɟuff ^h :	(p.60)
muɟt̪i:	(p.58)	ɟam ^h i:	(p.60)
ɟaɟt̪i:	(p.59)	ɟamr ^h i:	(p.61)
baɟt̪i:	(p.59)	ɟamɟi:	(p.62)

The front half-close vowels.

Phonological symbols:Long.
eePhonetic symbols:

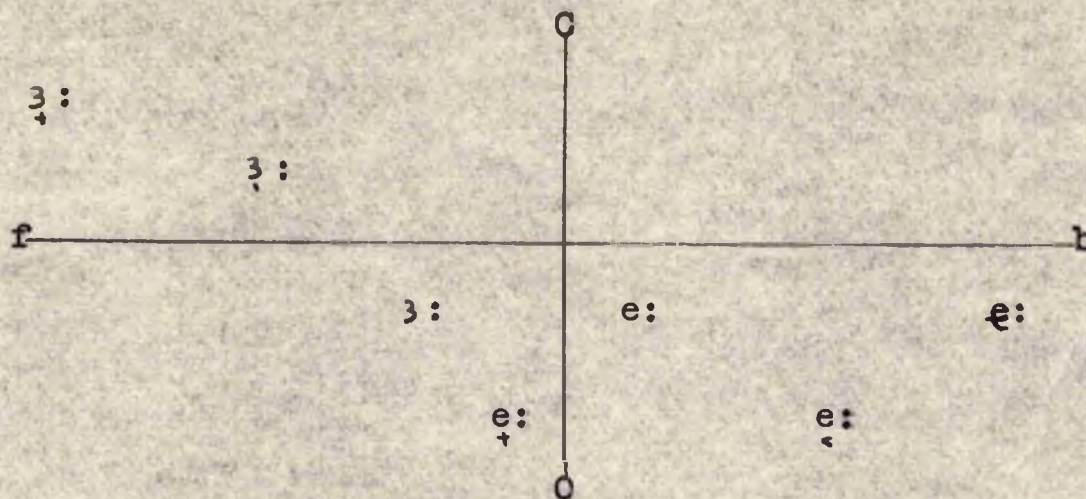
- | | |
|--------------------------------------------------------|----|
| 1. Preceding and following an
emphatic: | e: |
| 2. Preceding and following a
consonant of Group II: | e: |
| 3. Following a consonant of Group
III: | e: |
| 4. Following a consonant of Group
IV: | e: |
| 5. Following a consonant of Group
V: | ɜ: |
| 6. Following a consonant of Group
VI: | ɜ: |
| 7. Following a consonant of Group
VII: | ɜ: |

There is no variation in length in this organic group of vowels, all the front half-close vowels are classified as long.

Each of these vowels can be put in one of two orders: the first, horizontal, is organic and is expressed by the term front-half close; the second, vertical, is a resonance association expressed by the terms Group I, Group II, Group III, etc. According to the first order, e:, for example, can be put in the following arrangement:

i: , e: , a: , ɐ: and u: , but the second order appears as follows: e: , e: , e: , e: , ɜ: , ɜ: and ɜ:

The front half-close vowels can be diagrammatically illustrated as follows:

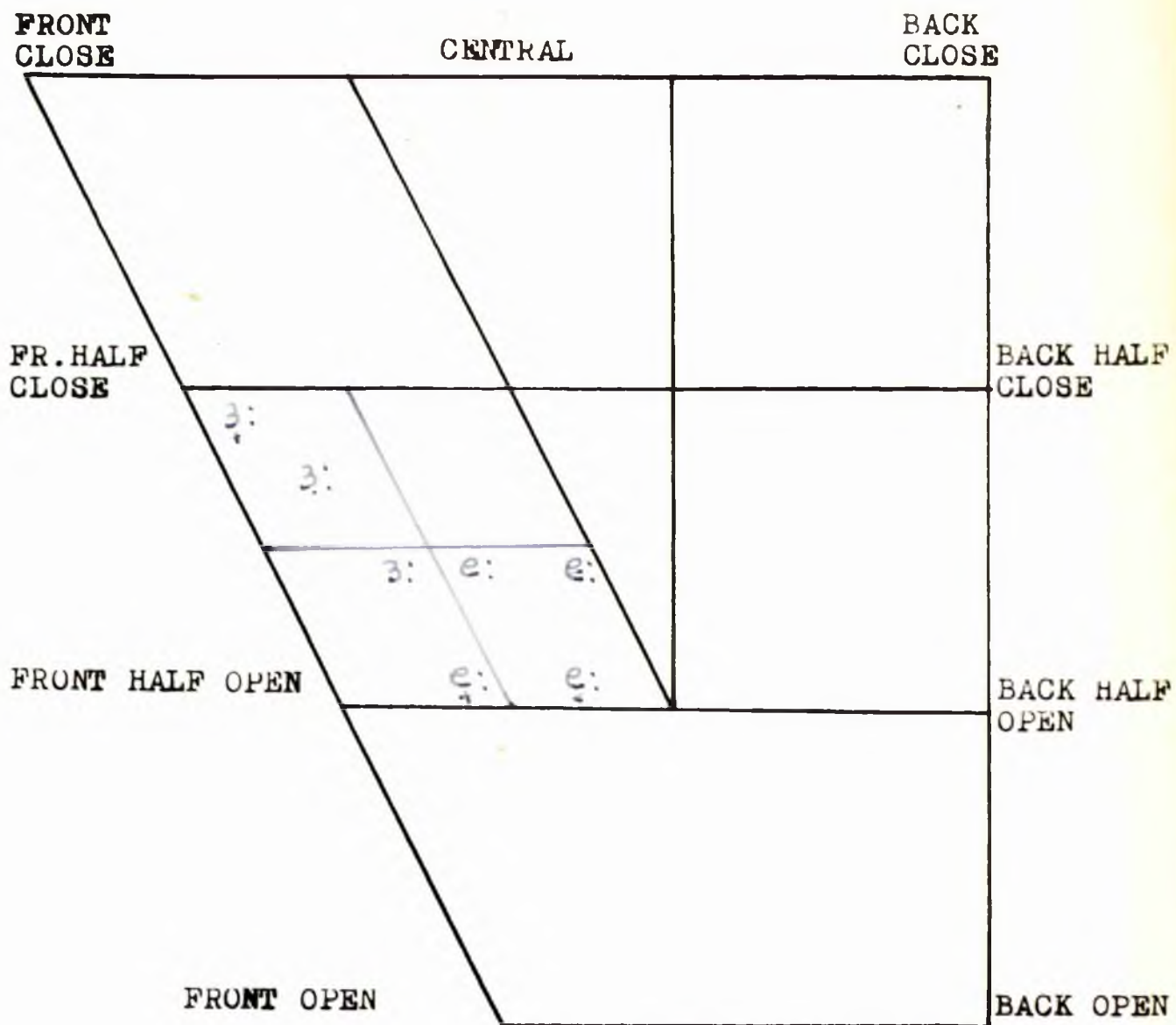


This diagrammatic arrangement expresses the relative position of each vowel within the area on the vowel figure that is described as front between half-close and half-open: these vowels are between half close and half-open, but for a shorter term they are called the front half-close vowels. The above diagram is designed to be superimposed on the area of these vowels on the vowel-figure. When it is superimposed on the vowel-figure, it appears as on the following page.

The *e:* vowel is pharyngealized and has a maximum of backness among these vowels, i.e. the highest point of the tongue for *e:* is further back than with any other back half-close vowel, e.g.

se:f - *de:f* - *te:f* - *fe:d*

The two vowels *e:* and *e:* have a maximum of openness (i.e. they are pronounced with the widest space between



The Front Half-close Vowels.

the jaws), but they differ in the back-front order; $e:$ is further back, e.g.

 $qe:d$ $xe:r$ $ye:b$ $ze:b$ $he:l$ $fe:j$

The two vowels $e:$ and $3:$ are nearest to the centre of the front area between half-open and half-close, and therefore, they have no dimensional maximum on the diagram, they differ from each other in that $e:$ is further back than $3:$, e.g.

 $be:t$ $l3:l$ $me:l$ $n3:s$ $fe:n$ $r3:l$

The closest and furthest front are $3:$ and $3:$, but the latter has a maximum of both closeness and frontness as can be seen on the diagram, e.g.

 $d3:l$ $j3:b$ $s3:l$ $c3:f$ $z3:f$ $ʒ3:b$

These vowels give palatograms, as can be seen in the palatographic examples on p. 63 of the appendix of palatograms:

1) $qe:m$ 2) $ye:m$ 3) $we:m$ 4) $he:m$ 5) $l3:m$ 6) $d3:m$

Only palatograms 1 and 2 are used words; the rest are nonsense.

The Open Vowels

<u>Phonological symbols:</u>	Short a	Long aa
<u>Phonetic symbols:</u>		
1. Preceding and following an emphatic:	a	a:
2. Preceding and following Group II:	ʌ	ʌ:
3. Following a consonant of Group III:	ʌ	ʌ:
4. Following a consonant of Group IV:	a	a:
5. Following a consonant of Group V:	ɒ	ɒ:
6. Following a consonant of Group VI:	æ	æ:
7. Following a consonant of Group VII:	ɛ	ɛ:

The organic affinity between one and another of these vowels is expressed in the description open, which denotes the space between the jaws on the one hand and the tongue-position on the other. The long and short variants of each pair above are associated by:

1. a common resonance arrangement,
- and 2. an association with a specific consonantal group.

Looking at the chart (p.364), one can see that every open vowel has two associations, one of which, horizontal, is organic and the other, vertical, is acoustic, i.e. association of resonance. According to the organic

association 'a:' , for example, is one of the order:

a: , ʌ: , ɶ: , a: , ɒ: , ɤ: , ɛ: ,

but according to the acoustic association (vertical) , this vowel is one of the order

i: , e: , a: , ɔ: , u:

The open set of vowels cover an area, on the vowel-figure, that partly back and partly front, i.e. some vowels in this set are described as back-open (e.g. ʌ , a: , ɶ and ɶ:) while others are described as front (e.g. ɤ , ɤ: , ɛ and ɛ:). Therefore, in describing the group in general, it is better to use the term "open" alone without reference to "back" or "front". In defining a specific variant of this set, however, reference has to be made to either term. In relation to the vowel figure, these vowels are as on the following page.

The variants 'a' and 'a:' are pharyngealized or, to use another term, emphatic. This extends the use of the latter term from the consonants to the vowels. It also means that these two variants have, among the open vowels, maximum of backness, i.e. the highest point of the tongue for these two variants is further back than with any other open vowel, e.g.

qɑ:ɛ

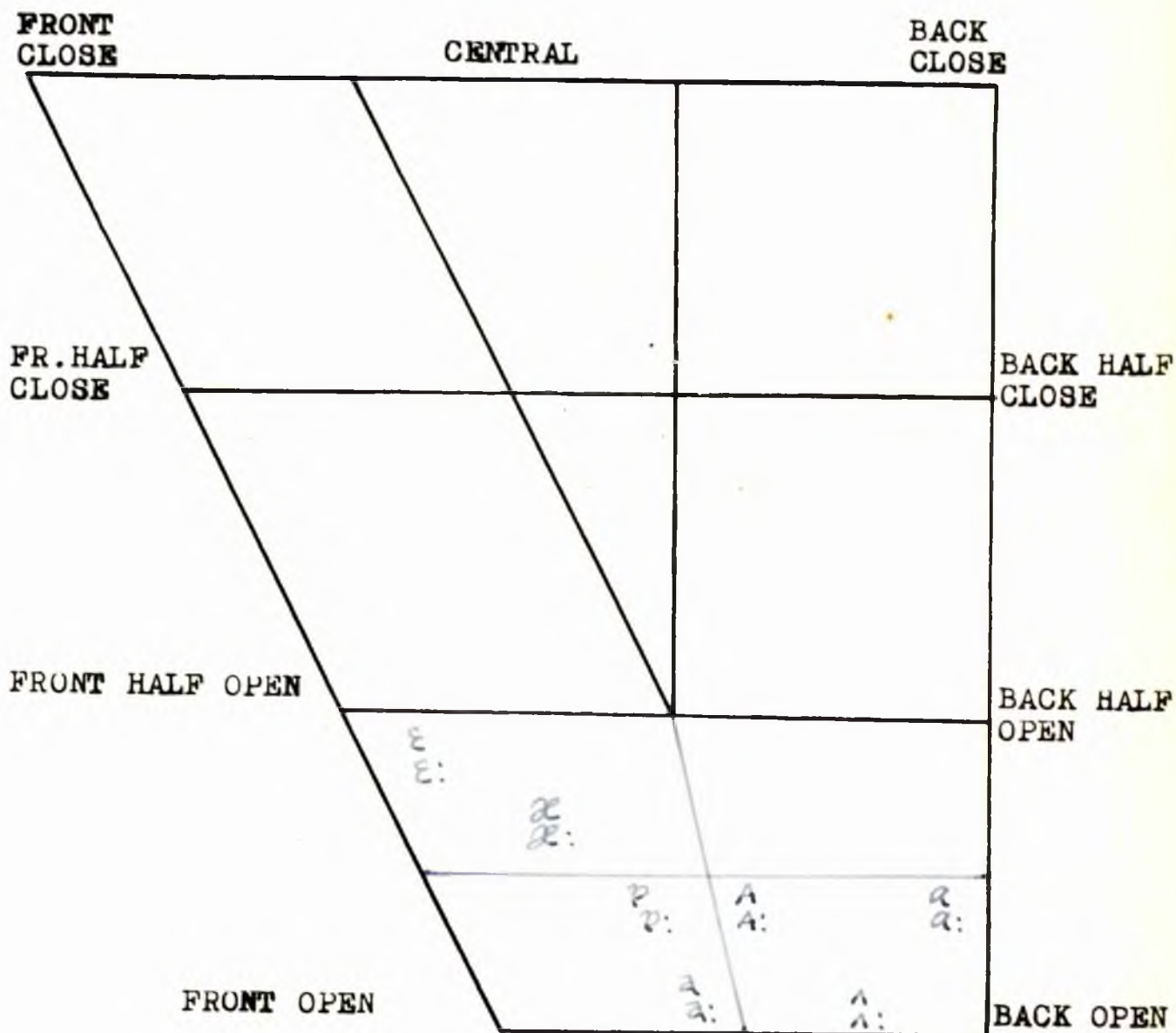
ba:qat

tɑ:b

fa:tɪr

sa:m

fa:sɪl



The Open Vowels.

qaxɛ:f

ʃaŋɖaf

ɬalɔb

ʃalɬaf

ʃalɔb

ʃaŋʃaf

The variants 'ʌ', 'ʌ:' 'a' and 'a:' are pronounced with widest space between the jaws, i.e. they have maximum of openness among the open vowels, and they differ in the back-front order, e.g.

qa:ɛɬɖ

ʒa:ɖɪl

xa:ɖɪm

ha:mɪɖ

ya:lɪb

ha:rɪb

ʃaŋxur

ʃa:tɪ:

ʃaŋyuz

ʒadæl

ʃaŋqas

hamad

raqad

harɔb

naxar

ʃatæ:(h)

The two pairs 'ʌ', 'ʌ:' and 'ɒ', 'ɒ:' are nearest to the centre, not of the vowel-figure, but of the area for the open vowels. They, too, differ in the back-front order,

e.g.

ba:lɪy

no:ɛɪm

fa:hɪm

ro:hɪm

wa:hɛɖ

lo:bɪs

ma:cɪr

mandɛɪ

bandɪ

rɒɬam

fanɪt

lobas

walɒɖ

nɒbad

macɛr

lɒʒab

The vowels 'æ' , 'æ:', 'ɛ' and 'ɛ:' are closer and further front than the other open vowels, but the last two (ɛ and ɛ:) have maximum of both closeness and frontness. The organic explanation of this statement is in reference to the space between the jaws in relation to closeness, and to the highest point of the tongue in relation to frontness,

e.g.	tæ:h	ce:tɪb
	dæ:m	ʃɛ:cɪr
	sæ:b	ʒɛ:hɪl
	zæ:m	ʒɛ:fɪʒ
	tænd: (h)	cetæb
	sæmæ: (h)	ʃetæm
	dæmæʒ (ʒ)	ʒemæl
	zærvɛ (ʒ)	ʒemæn

The two vowels (ɛ and ɛ:) are nearer half-open than open, but for the purpose of classification, they are described as "open".

In the pronunciation of the open vowels:

1. The lips are neutrally shaped.
2. The position of the tongue varies according to the individual vowel.
3. The space between the jaws is wide.

The two terms:

- emphasis (lit. making thicker)

and

- non-emphasis (lit. making thinner)

are used in Arabic in relation to the open vowels as well as the consonants.

The Back half-close Vowels

Long

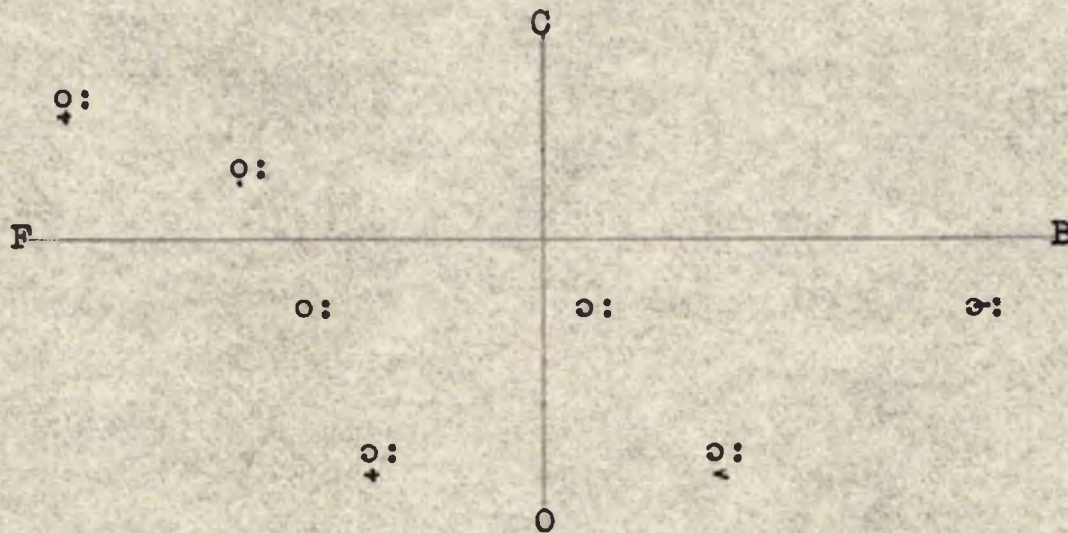
Phonological symbol:Phonetic symbols:

- | | |
|-----------------------------------------------------|----|
| 1. Preceding and following an emphatic consonant: | ə: |
| 2. Preceding and following a consonant of Group II: | ɔ: |
| 3. Following a consonant of Group III: | o: |
| 4. Following a consonant of Group IV: | ɔ: |
| 5. Following a consonant of Group V: | o: |
| 6. Following a consonant of Group VI: | ɔ: |
| 7. Following a consonant of Group VII: | o: |

There is no variation in length in this organic group of vowels; all back half-close vowels are classified as long. These vowels give no palatograms.

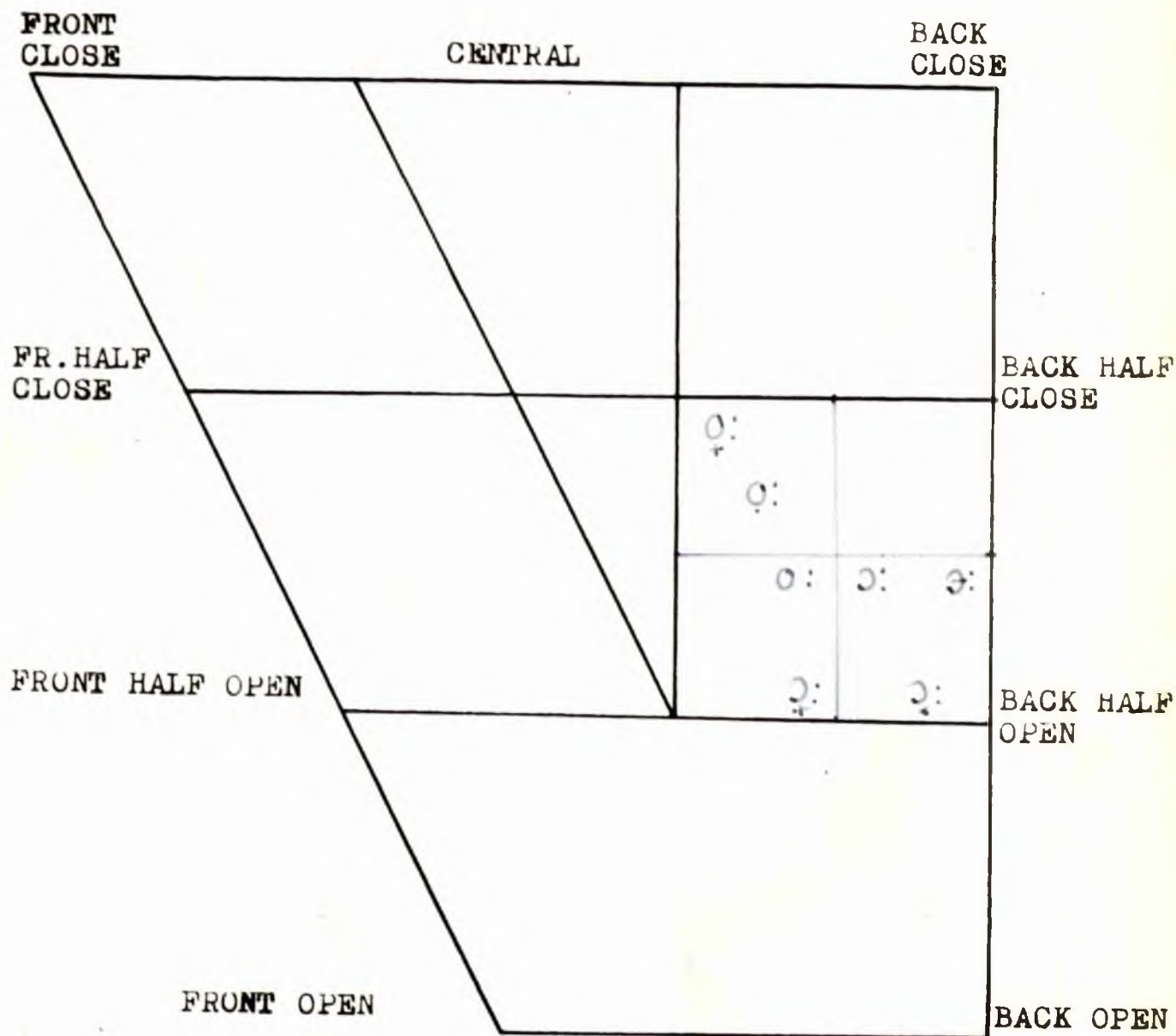
The chart on p.384 shows each of these seven variants has a horizontal (organic) and a vertical (resonance) association. The horizontal association is implied in the term "back half-close" which is common to all of these, and the vertical is covered by the terms Group I, Group II, etc. If 'ə:' is taken as an example, it will be found that according to the former association (i.e. organically) it is one of the order: ə: , ɔ: , ɔ: , ɔ: , o: , ɔ: , ɔ: , but according to resonance association it is one of the vertical order: i: , e: , a: , ə: , u: .

The back half-close vowels cover an area on the vowel-figure which is between back half-open and back half-close, but for a shorter term, they are called "back half-close". The position of the highest point of the tongue in one and another of these seven vowels has a similar diagrammatic arrangement to that of the other organically associated vowel sets, i.e. similar to the diagrammatic arrangement of the front-close, the front half-close and the open vowels. This arrangement appears as follows:



When superimposed on the vowel-figure, this diagram appears as on the following page.

The variant 'ɔ:' is pharyngealized or emphatic. It has maximum of backness among the back half-close vowels, i.e. the highest point of the tongue with this vowel is further back than with any other back half-close vowel, e.g. sɜ:m - sɜ:t - tɜ:q - hɜ:d - sɜ:t - fɜ:t.



The Back Half-close Vowels.

The two vowels 'ɔ:' and 'o:' have maximum of openness among this organic set with a difference in the back-front order, i.e. the space between the jaws with these two vowels is wider than with any other back half-close vowel, e.g.

qɔ:l

hɔ:l

xɔ:f

ɛɔ:f

ʏɔ:t

hɔ:l

ʃɔ:q

ɛɔ:n

xɔ:x

hɔ:ʃ

fɔ:q

ɛɔ:d

The vowels 'ɔ:' and 'o:' are nearer to the centre of the area not of the vowel-figure with a difference in the back-front order, i.e. they have no maximum of any dimension within the area, e.g.

mɔ:t

rɔ:h

fɔ:z

nɔ:m

bɔ:l

lɔ:m

fɔ:h

lɔ:n

The two vowels 'o:' and 'ɔ:' are the closest and frontest among these vowels, but it is 'o:' which has a maximum of both closeness and frontness, i.e. with vertical and horizontal differences which are two expressions used in relation to the space between the jaws and the highest point of the tongue respectively, e.g.

tɔ:bA h

ʃɔ:r

hɑ:dɔ:l

cɔ:ɛ^h

so:ðæ, h

jo:m

zo:ʒe (ʰ)

ʃo:c

In the pronunciation of all these vowels:

1. The lips are slightly rounded.
2. The back of the tongue is raised to a position between half-open and half-close.
3. The space between the jaws is rather narrow.

The Back close Vowels

<u>Phonological symbols:</u>	Short u	Long uu
<u>Phonetic symbols:</u>		
1. Preceding and following an emphatic:	ʊ	u:
2. Preceding and following a consonant of Group II:	u	u:
3. Following a consonant of Group III:	ū	ū:
4. Following a consonant of Group IV:	ʊ	u:
5. Following a consonant of Group V:	ū	ū:
6. Following a consonant of Group VI:	u	u:
7. Following a consonant of Group VII:	ū	ū:

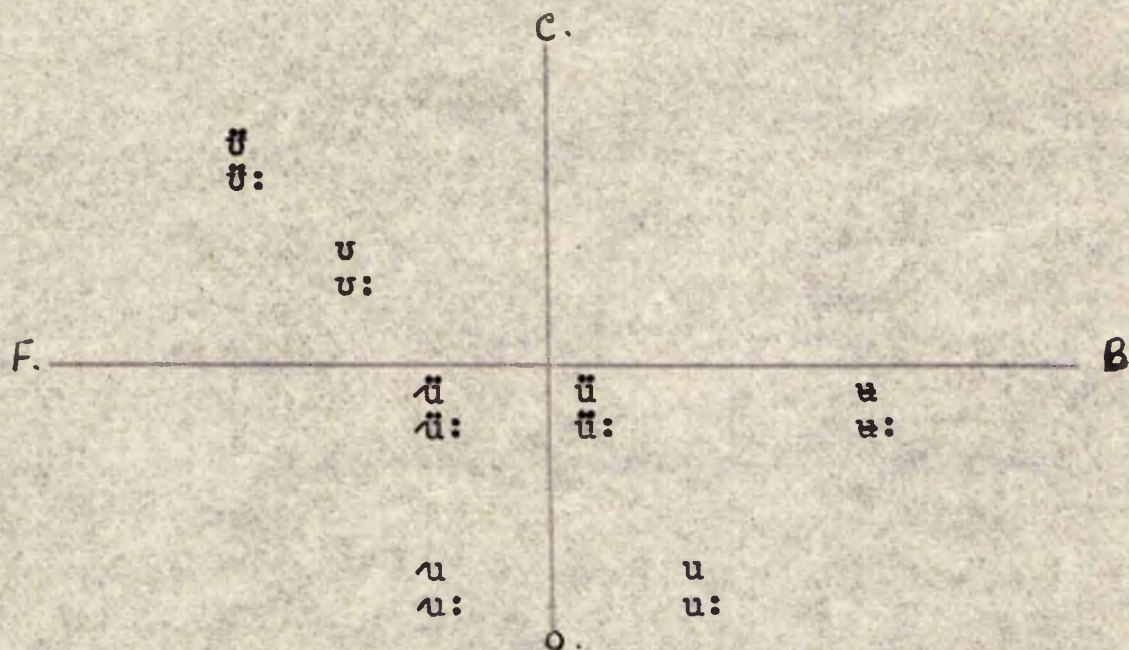
These organically associated vowels include long and short variants each two of which are related from two points of view:

1. They have a common resonance arrangement,
- and 2. They occur in specific junctions of consonants, e.g. 'u' and 'u:' occur before and after the emphatics.

Looking at the chart on p. 364, one can see that every back close vowel fits in two orders. If 'u:' is taken as an example, it will be found to fit in the order u: , u: , ū: , u: , ū: , u: with organic affinity expressed by

the term "back-close", and in the order $i:$, $e:$, $a:$,
 $\text{ə}:$, $u:$, with resonance relation expressed in the term
 "Group I".

These vowels give no palatograms. When diagrammatically
 arranged they will appear as follows:



When superimposed on the vowel figure, this diagram
 will appear as on the following page.

The short and the long 'u' and 'u:' are pharyngealized
 and occur before and after an emphatic consonant.

These two vowels have maximum of backness among the back
 close vowels, i.e. the highest point of the tongue with these
 is further back than with any other back close vowel, e.g.

su:f

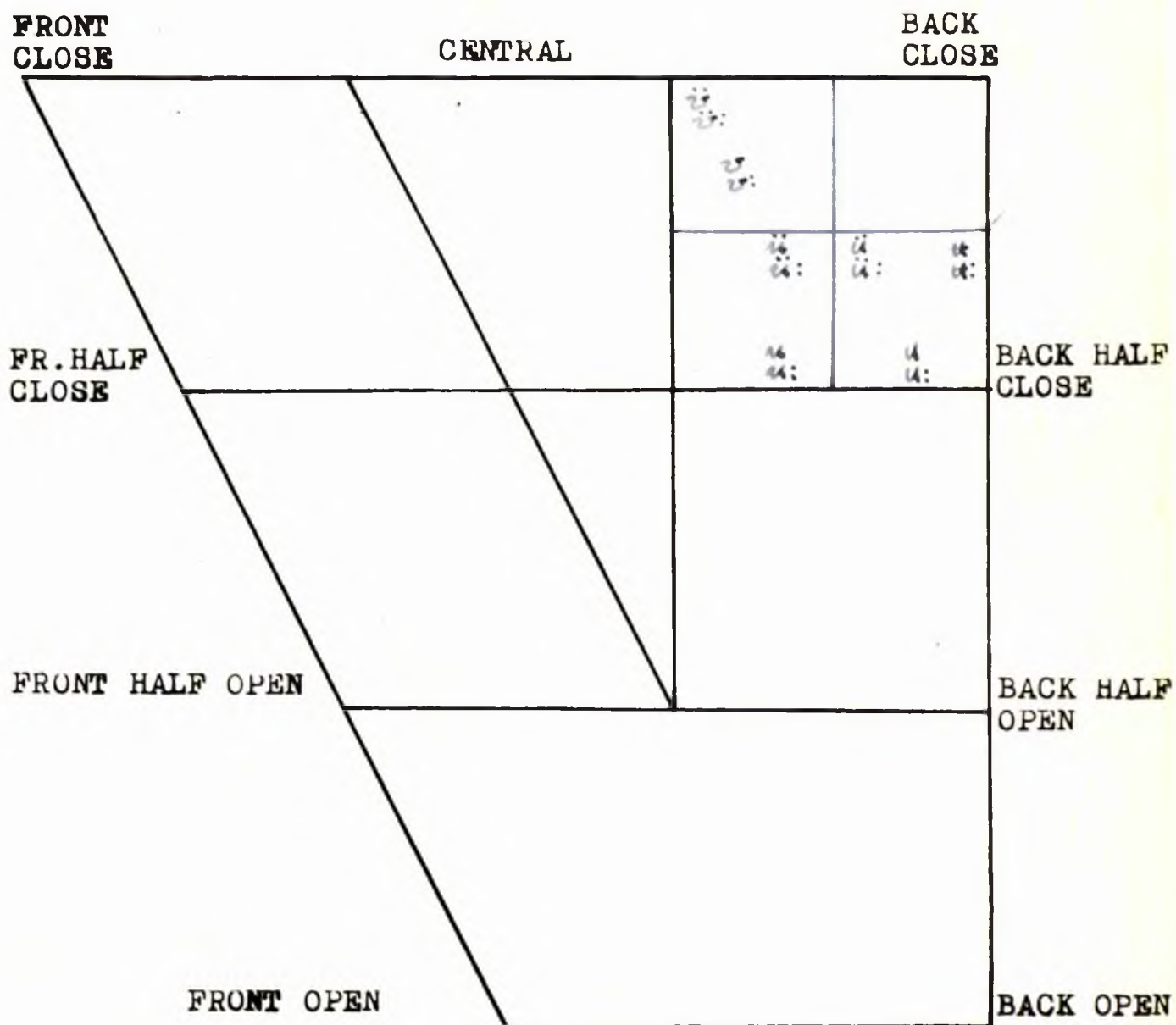
naqu:ɾ

xasu:ɕ

juḥdʒuḥi (h)

tubɛa (h)

qulū:ɛ ɔ



The Back Close Vowels.

huq̣u:ḍ

sura:x

hubu:ṭ

jaṣ^əru:x

The vowel u , u: , u and u: have maximum of openness with a difference in the back-front order, i.e. the space between the jaws with these vowels is wider than with any other back close vowel, e.g.

yuma:ḍ

yuḷbụ̄ (h)

ɣu:ḍ

ɣuḍ^əroC

qu:m

xuḷqu (h)

hu:ɾ

ɣumma (h)

xu:ŋ

quḷbụ̄ (h)

marɣu:s

huɾma (h)

yu:ɾ

tuq̣^əḷụ̄ (h)

marhu:ŋ

jụ̄humụ̄ (h)

su:q̣

xuzqu (h)

marhu:m

ɣumroC

zu:ɣ

yuba:r

jehu:di:

hubbaC

The vowels ū , ū: , ū and ū: are nearest to the centre of the back close area (not of the vowel-figure) but with difference in the back-front order, and therefore, they have no maximum of any dimension, e.g.

maɣmụ̄:ŋ

mụ̄jrim

ŋụ̄:ɾ

ŋụ̄fɛa (h)

maħbụ̄:s

bụ̄c̣^əro (h)

maɣḷụ̄:f

jaḍ^əḷụ̄mhu:m

madfụ̄:ɛ

fụ̄lo:n

maɣḷụ̄:f

ḷụ̄cba (h)

jilwụ̄:h

wụ̄jhu (h)

jiḅ^əŋụ̄:h

The u , u: , ū and ū: are the frontest and the closest vowels among the back close, but the last two have maximum of frontness and closeness (i.e. the difference between the two pairs is both vertical and horizontal) of

all these vowels, e.g.

maxtu:m	turba ^(h)	macʃü:f	ʃülʃü ^(h)
maɛdu:m	dufɛa ^(h)	maɛʃü:ŋ	ʃündi:
maɛzu:m	zubdæ ^(h)	maʃcü:ŋ	cünnö: ^(h)
macsu:f	sumɛa ^(h)	maɛʃü:b	ʃüdxuʃ

All the long back close vowels in final cvv in the spoken group are diphthongized, e.g.

jirqu: , jisqu: , jirmü: , jidɛu: , jir^əʃü: , jiftu: ,
jimʃü:

All short back close vowels in cv , cvc or cvcc final in the spoken group have opener quality which reaches between half-close and half-open, e.g.

barqu ^(h)	juxsum	ʃuʃ ^(h)
farqu ^(h)	juɾqud	quf ^ə ʃ
qurbu ^(h)	jümbüɛ ^(h)	büɛd
jerhu ^(h)	jüɾɛuf	ɛurɸ
bayʃü ^(h)	juɾɸuf	ɸübe ^(h)
baxtu ^(h)	jüftur	tüɾc
faccü ^(h)	jüɾjüm	cüɾh

In the pronunciation of all these vowels:

1. The lips are rounded.
2. The back of the tongue is raised,
- and 3. The space between the jaws is narrow.

The Central Vowels

The symbol of vc vowel in phonological

transcription:

'ə'

Phonetic symbols: "VC vowel"

Anaptyctic vowel

(ə)

(^ə)

The anaptyctic vowel is not represented in phonological transcription.

As can be seen, there are two types of central vowel:

1. that of 'VC' syllable initial in the word, which is found in:

a) the definite article, e.g. əl be:t

əl wald

ərriʃt:l

ətʃaləb

b) prefixes of some verbal forms (see the typical morphological forms, pp.50-58), e.g.

əstəha:(h)

əmtəhan

ənʔaɖar

əntima:l

əɖrüb

əɖxuɭ

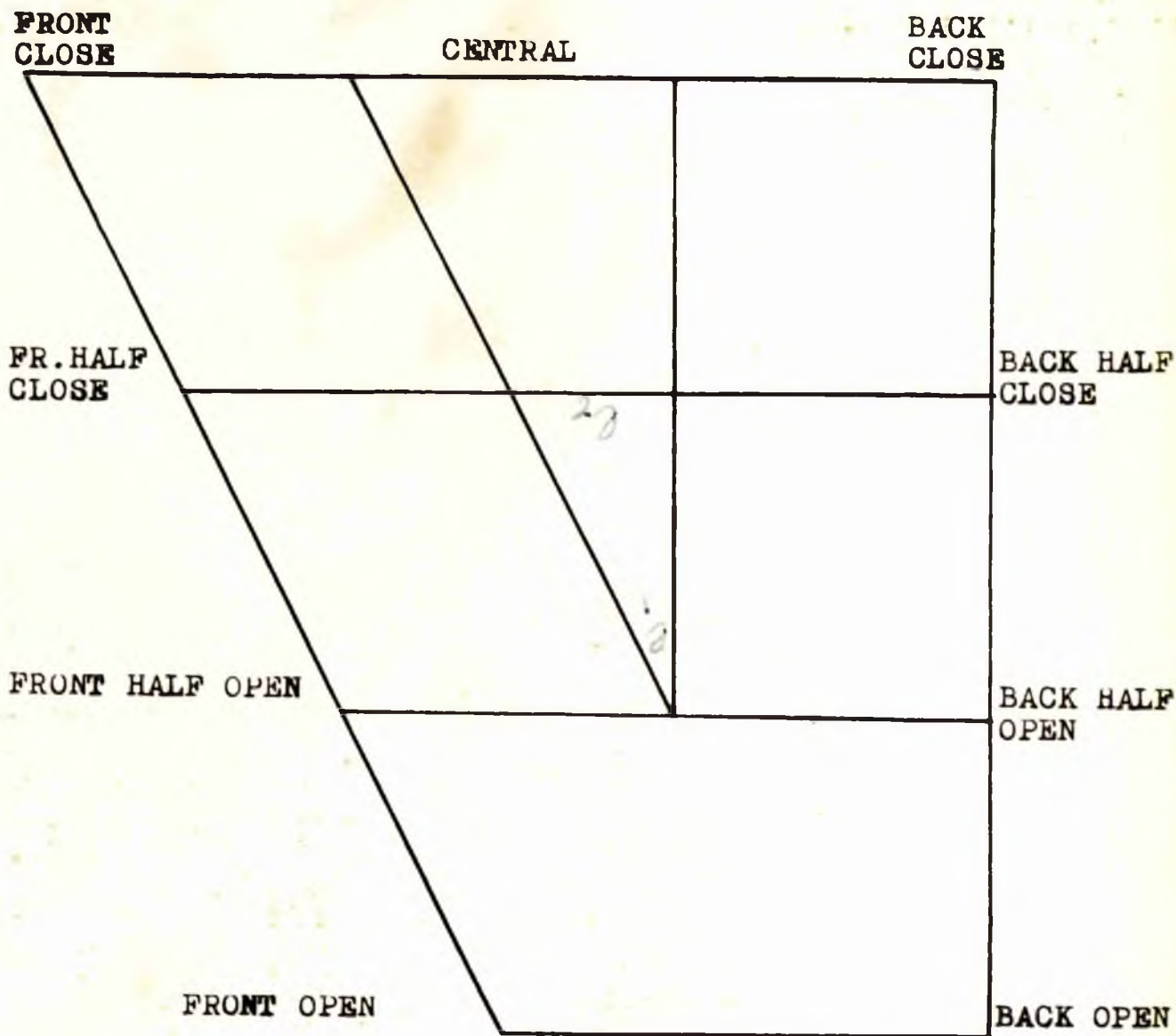
This vowel is transcribed 'ə' written at the same level as the other symbols in the sequence, in both phonological and phonetic transcriptions,

and 2. the anaptyctic vowels found in specific junctions of two consonants in the continuum (see anaptyxis, p.170) and are transcribed (^ə) written higher above the line, e.g.

ʃat^əldf

ʃaɖ^ənoɖɭ

ʃac^ərdm



The Central Vowels.

ɜ is the VC vowel, and
2ɜ is the anaptyctic.

qat^əlfam^ənfaj^ərfa:t^əno_(h)qa:t^əlo_(h)sa:b^əro_(h)ɛabd^ərobbū_(h)bīnt^ənū:h

The anaptyctic vowels, though given a collective symbol, differ in quality within the central area. They seem to have some harmony with the preceding vowel. A narrower transcription of

qɪb^əlɔ_(h)qab^əlū_(h)qub^əlɔ_(h)

would be

qɪb^ɪlɔpqab^əlū_(h)

and

qub^ulɔ_(h)

BIBLIOGRAPHY.

- 1 - Al-Ashmuni: Commentary of Sabban on Al-Ashmuni's Interpretation of Ibn-Malik's 'Alfiyya'. Vol. 1. Cairo. N.D.
- 2 - Bloch.B. & :
Trager G.L.: Outline of Linguistic Analysis. Special Publication of The Linguistic Society of America. At the Waverly Press Inc. Baltimore, Md. 1942.
- 3 - Mantim Joos: Acoustic Phonetics. Supplement to Language Journal of The Linguistic Society of America. The Waverly Press Inc. Baltimore-2, MD.
- 4 - Bloomfield L: Language. London. 1934.
- 5 - Carnochan J.: A Study of the Phonology of an IGBO Speaker (Bulletin of S.O.A.S. Vol. XII Part 2). London. pp. 417-26.
- 6 - Darmesteter A. : La Vie des Mots. Paris. 1946.
- 7 - De Saussure F: Cours de Linguistique Generale. Paris. 1949.
- 8 - Firth J.R. : Personality and Language in Society. (Sociological Review, Vol. XLII. Sect. 2 The Le Play House Press, Ledbury, Herefordshire. 1950. pp. 37-52.
- 9 - " " " : Technique of Semantics. Transactions of Philological Society, 1935. pp. 55-67.
- 10 - " " " : Linguistics and The Functional Point of View. English Studies, Amsterdam XVII, 1934. pp. 1 - 8.
- 11 - " " " : Sounds and Prosodies. T.P.S. 1948 pp. 127 - 152.
- 12 - " " " : Word-Palatograms and Articulation, (Bulletin of S.O.A.S. Vol. XII, Parts 3 and 4, London 1948, pp. 857 - 864.

- 13 - Firth, J.R. : Improved Techniques in Palatography and
and Kymography (Bulletin of The S.O.A.S.)
Adam, H.J.F. : Vol. XIII, Part 3, 1950, pp. 771-4.
- 14 - Gardiner,
Sir A. : Speech and Language. Oxford, 1951.
- 15 - Harris, Z.S. : Methods in Structural Linguistics. The
University of Chicago Press. 1951.
- 16 - Ibn-Aqil : Commentary of Sugai on Ibn-Aqil's
Interpretation of Ibn-Malik Alfiyya,
Cairo - 1944.
- 17 - Jespersen, O. : The Philosophy of Grammar, London. 1948.
- 18 - Jones, D. : An Outline of English Phonetics,
Cambridge, 1947.
- 19 - Lewis, M.M. : Language in Society. London. 1947.
- 20 - Marouzeau, J. : Lexique de la Terminologie Linguistique.
- 21 - Martinet, A. : Phonology as Functional Phonetics.
Publications of the Philological Society
IV, Oxford University Press, London. 1949
- 22 - Meillet, A. : Linguistique Historique et Linguistique
Generale, Paris. 1948.
- 23 - Pike, K.L. : Phonemics. University of Michigan
Publications. Linguistics, Vol. III. Ann
Arbor. 1947.
- 24 - Ross, A.S.C. : The Fundamental Definitions of The
Theory of Language. Acta Linguistica IV,
3, 1944, pp. 101-106.
- 25 - Royal The Middle East. A Political and
Institute of Economic Survey. London. 1950.
International
Affairs :
- 26 - Sapir, E. : Language. New York. 1921.

- 27 - Sapir, E. Selected writings of Edward Sapir in
Language, Culture and Personality.
Edited by David G. Mandelbaum.
Cambridge University Press. London. 1949.
- 28 - Schlauch, M. Early Behaviourist Psychology and
Contemporary Linguistics. Word, Vol. (1946) 2.
- 29 - Schubiger, M. The Role of Intonation in Spoken English.
:St. Gall Fehr'sche Buchhandlung. 1935.
- 30 - Sweet, H. :A Primer of Phonetics. Oxford. 1902.
- 31 - Troubetzkoy,
N.S. :Principes de Phonologie. Paris. 1949.
- 32 - Ullmann,
S. :The Principle of Semantics. Glasgow. 1951.
- 33 - Vendryes, J. Language. A Linguistic Introduction to
:History. London. 1949.
- 34 - Ward, I.C. :The Phonetics of English. Cambridge. 1948.
- 35 - Whitney,
W.D. :Language and The Study of Language,
London. 1880.

=====

DAWOD (T. H. O. M.)

Ph.D. 1959.

(Aden Dialect of Arabic.)

Reference copy



PALATOGRAPHY

NOTE: A grid which is designed for the measurement of palatograms is to be found in an envelope attached to the back cover of the Appendices.

Palatography

Palatograms are not utterances. They are wipe-offs, each of which can be correlated to an utterance, and, more specifically, to a certain phase of this utterance; this phase is not taken as an isolate, but as a part of an articulatory phonetic context. For example, when it is said that the wipe-off of the palatogram "qɑ:ɛ.ɤ" (p.1) is dental, such a statement can, more specifically, be related to the initial phase in the utterance, and a secondary statement can be made on this basis, that the 'q' is dental in articulation. A description of a palatogram, therefore, is not a description of an utterance or an articulation of some kind; it is a description of a wipe-off which is not an end in itself but a means of determining a given articulation.

It is important to realize what questions the technique of palatography is capable of answering before choosing the examples and analysing them. It is equally important to select the examples suitable for this technique, without articulation in the example interfering with the wipe-off of another. Articulations are of two types in relation to this technique:

1. those capable of giving wipe-offs
- and 2. those incapable of giving palatograms.

An ideal example should contain only one articulation of the former type.

The articulations of A.D. sounds are as follows:

- | | |
|-------------------|------------------|
| 1. Bilabial | 8. Velar |
| 2. Labio-dental | 9. Uvular |
| 3. Dental | 10. Pharyngeal |
| 4. Denti-alveolar | and 11. Glottal. |
| 5. Alveolar | |
| 6. Post-alveolar | |
| 7. Palatal | |

Only Nos. 3 to 7 inclusive are capable of giving wipe-offs; the articulations of the rest are either anterior or posterior to the area suitable for this technique. A wipe-off that is interfered with is not reliable as a source of abstraction, since no clear-cut delimitation of such wipe-off can be established.

At this juncture, the following can be stated about interference in palatograms:

1. Every two articulations of the same place interfere with one another. It will be seen later that the size and general appearance of a wipe-off is related to position; and since the two articulations of the same place in the same palatogram will give different sizes and shapes in their respective wipe-offs, the interference with each other of these two articulations will result in a wipe-off that is characteristic of neither when treated in its

specific context. Therefore, a palatogram, to be taken as a source of abstraction, should not, for example, contain

s - z , s - ʒ , s - t or s - d; nor should it contain
ʃ - ʒ , ʃ - c or ʃ - j.

2. The two articulations of adjacent places are mutually interfering, e.g. dental - denti-alveolar

denti-alveolar - alveolar

alveolar - post-alveolar

and past-alveolar - palatal.

Three articulations can coincide in one palatogram, provided no two of these are immediate neighbours, e.g.

dental - alveolar - palatal, as in "darr̥c".

3. Finally, the bi-lateral wipe-off of the front-close and half-close vowels has been cautiously interpreted, especially with palatal articulations. The ideal vowels to be chosen in junction with a given articulation in a palatogram are the open ones. Almost all the palatograms compared for the purpose of studying the consonant in the phonetic section of the thesis are with open vowels.

It has been found that the technique of palatography can be employed in studying the following questions, in relation to A.D. articulations:

1. Place of articulation

2. In denti-alveolar articulations, an opposition of "tip-up - tip down" has to be made in relation to the

position of the tip of the tongue in articulating the plosive and the fricative consonants respectively.

3. Tensity and laxity of articulation in relation to position in the utterance,

and 4. Some prosodic features can be abstracted from multi-contact palatograms.

These four points are studied in detail as follows:

1. Place of articulation.

It has been stated that only the following articulations can be studied in palatography:

- a. Dental
- b. Denti-alveolar
- c. Alveolar
- d. Post-alveolar
- and e. Palatal.

a) Dental articulation: 'q'

The wipe-off of 'q' is invariably found in the dental zone of the artificial palate; it sometimes extends beyond, at other times not, according to tensity and laxity. In relation to 'q' the following palatograms can be examined:

qɪ:f (p.1)

There is a dental wipe-off extending to denti-alveolar with an untouched area between the left and median line, and untouched spots left of the left and right of the right line.

In the alveolar zone, the wipe-off is lateral left of the left, and is found on both sides of the right line, posterior to the lateral incisor line on the right side, yet on the left of this right line, the wipe-off is much less than on the right.

qa:ɛ^h (p.1)

The wipe-off is dental, extending as far back on the two sides as the canine line, but between the left and the right lines, it ceases at the lateral incisor line, with scattered untouched spots in the denti-alveolar zone.

quha: ^h (p.1)

The wipe-off is dental, extending on both sides to points anterior to the canine line. Between the left and the right lines, the wipe-off is denti-alveolar and does not cover the whole zone. There are also scattered untouched spots outside both these lines.

faqɪ:ka^h (p.1)

In this palatogram, the wipe-off is almost exclusively bilateral. In the dental zone, there is only a slight touch, right of the median line, and in the denti-alveolar zone, there is a larger touch left of the right line.

faqah (p.1)

The wipe-off is dental only between the median and the right line. On both sides of the artificial palate, a ridge is wiped off which reaches as far back as the canine line.

xaɖa:ɛ ʰ (p.1)

The dental touch is slight and is left of the right line. In the denti-alveolar zone, it is also slight left of the left line, but on the right, it is found on both sides of the right line. In the alveolar zone, the wipe-off is only on the extreme right and is also slight.

biɖʒa ʰ (p.2)

The dental wipe-off occurs between the median and right lines. In the denti-alveolar zone, there is a narrow ridge left of the left line and a wipe-off on both sides of the right line. In the alveolar zone, there are two ridges on either side.

ʒaɖma: ʰ (p.2)

The wipe-off is only a narrow ridge running along inside the circumference of the artificial palate in the denti-alveolar and the alveolar zones on both sides. The dental touch is negligible.

maɖɣa ʰ (p.2)

A wider ridge than in "ʒaɖma: ʰ" with an almost complete wipe-off of the dental zone and extension of it behind the incisor line left of the right and right of the left lines.

ʒaɖɖi:h (p.2)

A complete wipe-off of the dental zone, most of the denti-alveolar zone and both sides of the alveolar zone, larger on the right.

yamda, h (p.2)

A complete wipe-off of the dental, most of the denti-alveolar and both sides of the alveolar zone.

qabdu h (p.2)

A dental and denti-alveolar ridge which has a very small extension on the extreme right of the alveolar zone.

bayi:q (p.3)

The wipe-off is dental and extends to most of the denti-alveolar zone. The alveolar wipe-off merges with the bilateral wipe-off of the front close vowel.

hamad (p.3)

There is a ridge of wipe-off which is narrowest in the dental zone and wider at the extreme right than at the extreme left of the denti-alveolar and the alveolar zones.

huma:q (p.3)

The wipe-off is complete in the dental zone. In the denti-alveolar zone, left of the left line, there is an untouched area in the outer anterior angle of the left line with the lateral incisor; right of the right line, there is similar but smaller untouched area. Between the left and the right lines there are two touches, one at the interior-posterior angle of the incisor line with the left line and another at the opposite angle with the right line.

xuqɔ̃:h (p.3)

The dental wipe-off is complete; the denti-alveolar is almost complete; there are two untouched peaks on both sides of the median line. The alveolar wipe-off merges with the bilateral wipe-off of the front-close vowel.

ɣaɔ̃a^h (p.3)

The wipe-off is a ridge, which is widest in the right denti-alveolar zone, and narrowest in the dental zone. In the alveolar zone, it is of medium width.

xuqɔ̃a:h (p.3)

A ridge which is widest in the left denti-alveolar zone. In the right alveolar zone the touch is very slight.

ɣaɔ̃ɔ̃ (p.4)

The dental wipe-off is very small. In the denti-alveolar area, there are wipe-offs left of the left and right of the right lines, as well as in the posterior interior angle of the incisor line with the right line.

huqɔ̃ (p.4)

Complete dental wipe-off. Partial denti-alveolar and, almost no alveolar, wipe-off.

In all the above palatograms there is a dental wipe-off in varying size; 'ɔ̃' is dental.

b. Denti-alveolar articulation

Unlike dental articulation, the denti-alveolar articulation gives a palatogram which always has a lateral wipe-off, even with the open vowels. Palatograms are submitted here for the following denti-alveolar articulations:

t̥ , ʃ , t , d , s and z .

1) t̥

The wipe off of 't̥' palatogram is invariably denti-alveolar, whatever the position in the utterance. Extensions of this denti-alveolar wipe-off are according to tensity and laxity of articulation, as will be seen later. The following palatograms are examined

t̥:b (p.5)

Complete dental and denti-alveolar wipe-off. The alveolar zone is wiped-off except for a peak right and left of the median line. The post-alveolar wipe-off is merged with the bilateral.

t̥:bb (p.5)

The dental, denti-alveolar and the alveolar wipe-offs are all complete. The post-alveolar wipe-off merges with the bilateral. The untouched patch in the alveolar zone at the median line is a weak spot in the structure of the artificial palate which was wiped only when rubbed.

tɪbq (p.5)

Complete dental, denti-alveolar and alveolar wipe-offs as in "tɪbb" , the post alveolar merges with the bilateral wipe-off.

tɪbɔ:ɛa (h) (p.5)

No dental wipe-off. The denti alveolar zone is completely wiped off; the alveolar zone is wiped-off except for a peak at the middle.

tɔ:b (p.5)

Complete dental, denti-alveolar and alveolar wipe-off. The post-alveolar merges with the bilateral wipe-off.

tɔ:f (p.5)

The wipe-off is dental and denti-alveolar. Most of the alveolar zone is wiped-off except for a section between the left and the right lines. Throughout the wipe-off in all zones, there are untouched patches.

xatɪ:b (p.6)

No dental wipe-off. In the denti-alveolar zone, there is an untouched strip just behind the incisor line between the left and the right lines. This continues in an untouched ridge on the extreme right up to the starting point of the lateral incisor line. At the top middle of the alveolar zone there is an untouched peak. White patches are found all over these zones. The bilateral

wipe-off is very wide compared with that of "tɪ:b". The general impression of the palatogram is that of laxity of tongue contact as shown by the appearance of the wipe-off between the left and right lines.

ɛaɪab (p.6)

The dental wipe-off is not complete. The denti-alveolar wipe-off is full of untouched patches. The alveolar wipe-off is merged with the bilateral. Very lax contact.

xuɪu:b (p.6)

The wipe-off is dental, denti-alveolar and partly alveolar, but throughout the wipe-off, untouched patches are numerous.

ɛɪtɛa:m (p.6)

The wipe-off is dental, denti-alveolar and partly alveolar. Untouched patches are less than in "xuɪu:b" for example.

ɛaɪma:ɛ (p.6)

Dental, denti-alveolar and partly alveolar wipe-off. Less untouched patches than in "ɛɪtɛa:m"

xuɪba:ɪ (p.6)

Dental, denti-alveolar and partly alveolar wipe-off. Patches throughout; more than in "ɛaɪma:ɛ".

ʕΔɛʔɿ:h (p.7)

The dental, denti-alveolar and the alveolar wipe-offs are complete. Post-alveolar merges with bilateral wipe-off. This bilateral wipe-off is wider than in "ʔɿ:b

muɛʔɿb (p.7)

No dental wipe-off. Denti-alveolar wipe-off is complete, except for a narrow ridge on the extreme right. Alveolar wipe-off is complete, except for a peak at the top middle.

ʕΔqʔa:b (p.7)

Dental and denti-alveolar wipe-offs are complete. The alveolar wipe-off is complete, but for a slight untouched peak at the top middle.

ʕΔxʔa:h (p.7)

As in "ʕΔqʔa:b", except for the scattered patches all over the wiped-off zones.

maxʔa:b (p.7)

Very slight dental wipe-off. Denti-alveolar and alveolar wipe-offs are complete, except for a peak at the top middle of the alveolar zone. There are scattered untouched patches all over.

maɛʔa:f (p.7)

Dental and denti-alveolar wipe-offs are complete. In the alveolar zone, there is an untouched area at the top between the left and the right lines.

xabɿ:t (p.8)

Dental, denti-alveolar and alveolar wipe-offs are complete; untouched patches are found all over. Bilateral wipe-off is wide.

xabat (p.8)

Dental, denti-alveolar and alveolar wipe-offs are complete.

hubu:t (p.8)

The wipe-off is complete in the dental and the denti-alveolar zones with untouched patches. At the top middle of the alveolar zone, there is an untouched area.

natɿɿb (p.8)

Complete wipe-off in the dental, denti-alveolar and the alveolar zones. An untouched patch is found in the denti-alveolar zone.

ɛatɿab (p.8)

As in "natɿɿb". Two patches are found in the denti-alveolar zone.

xatɿu:h (p.8)

Dental, denti-alveolar and alveolar wipe-offs are complete, but for scattered patches throughout the wipe-off.

qɿɿɿ (p.9)

Complete wipe-off in the three foremost zones.

hatt (p.9)

Complete wipe-off in the three front zones and a partial wipe-off in the post-alveolar zone.

xatt (p.9)

Complete wipe-off in the three front zones with scattered untouched patches.

Denti-alveolar wipe-off is a common feature in all 't' palatograms.

ii) s

The denti-alveolar wipe-off is also a common feature in all 's' palatograms, but because the tip of the tongue is down, in the articulation of denti-alveolar fricatives, this wipe-off is not as marked as in the palatograms of the denti-alveolar plosives. It will be found that the alveolar inward extension of this wipe-off is also a feature in the palatograms of the fricative articulations. The following palatograms are examined.

sɪ:b (p.10)

The denti-alveolar wipe-off is more left of the left line than right of the right line. The alveolar wipe-off is bilateral and extends inwards on both sides to beyond the left and the right lines, respectively.

sa:b (p.10)

The same as for "sɪ:b" can be said about this palatogram except that the inward extension in the alveolar

zone is larger and the bilateral wipe-off is much narrower.

su:m (p.10)

The denti-alveolar wipe-off is larger at the extreme right than at the left. The alveolar inward extension of the wipe-off is less than in "sa:b" but narrower than in "sɛ:b".

ʔaʃɛ:b (p.10)

The denti-alveolar wipe-off is very slight. The alveolar bilateral inward extension ceases just inside the left line on the left and the right line on the right, i.e. it is not very marked. Bilateral wipe-off is wide.

ʔaʃab (p.10)

As in "ʔaʃɛ:b", but with feathery border of wipe-off and a narrower bilateral wipe-off.

xaʃu:m (p.10)

As in "ʔaʃɛ:b", but with greater alveolar inward extension of wipe-off and a narrower bilateral wipe-off in the back zones.

xaʃmũ, h, (p.11)

The denti-alveolar wipe-off is left of the left line. The alveolar inward extension is close to the median line on both sides.

faʃha:, h, (p.11)

The denti-alveolar wipe-off on the extreme left and its alveolar extension are less than in "xaʃmũ".

ṣawṣi:h (p.11)

The denti-alveolar wipe-off left of the left line is restricted in size by an untouched patch. The alveolar inward extension of wipe-off is greater on the left than on the right. An untouched patch is found left of the left line in the alveolar zone.

xabsu (p.11)

The denti-alveolar wipe-off is found both left of the left and right of the right lines. The alveolar inward extension of wipe-off is greater on the right than on the left.

mayṣu:b (p.11)

The wipe-off in the denti-alveolar zone is very slight on the left, but on the right there is an appreciable touch anterior to the lateral incisor line. The alveolar inward extension of wipe-off is greater on the right.

maṣṣu:m (p.11)

As in "mayṣu:b" above; there are some scattered untouched patches on the right of the alveolar zone.

qamī:s (p.12)

The wipe-off is complete left of the left line in the denti-alveolar and the alveolar zones. On the right, it is also complete in the post-alveolar zone. The inward extension on the left is alveolar and partly denti-alveolar.

On the right, it is alveolar and partly post-alveolar. An untouched patch is found anterior to the lateral incisor line and on the left line in the denti-alveolar zone.

xabas (p.12)

The denti-alveolar wipe-off is more than half the area left of the left line on the extreme left of the palatogram. On the extreme right of the denti-alveolar zone, there is an appreciable wipe-off just in front of the lateral incisor line. The alveolar inward extension of the wipe-off is marked in size.

yu:s (p.12)

The only denti-alveolar wipe-off in this palatogram is a slight touch just in front of the lateral incisor line left of the left line. The inward extension of wipe-off is only alveolar on the left, but also slightly post-alveolar on the right.

wassɪ:h (p.12)

The wipe-off left of the left line is complete in the two zones; denti-alveolar and alveolar. On the right, it is partial in the denti-alveolar zone, but complete in the alveolar and post-alveolar zones. The inward extension of wipe-off is only alveolar on the left, but alveolar and partly post-alveolar on the right.

qussɪ:h (p.12)

In the denti-alveolar zone, the wipe-off left of the left line is almost complete, but it is restricted in size

right of the right line. The inward extension of wipe-off is alveolar and partly post-alveolar on both sides.

Защаб (p.12)

The denti-alveolar wipe-off is complete left of the left line and almost complete right of the right line. The inward extension of wipe-off is alveolar and partly denti-alveolar on both sides.

20554b (p.13)

The wipe-off left of the left line is complete in the denti-alveolar and the alveolar zones. Right of the right line, it is partial in the denti-alveolar but complete in the alveolar zone. The inward extension of wipe-off is alveolar and denti-alveolar on the left, but alveolar and post-alveolar on the right.

qam: s. h. (p. 13)

Left of the left line, the wipe-off is lateral; at no point is there a wipe-off between the left and the median lines. Two untouched patches are found; one in the denti-alveolar and the other in the alveolar zone. The wipe-off on the right is also lateral except for an inward extension just in front and behind the canine line. The denti-alveolar touch on the right is restricted in size.

f155 (p.13)

The wipe-off left of the left line is complete in the denti-alveolar and the alveolar zones. Right of the right

line, there is an untouched ridge in the fore-part of the denti-alveolar zone, but the alveolar wipe-off is complete. The inward extension of wipe-off is wholly alveolar and partly denti-alveolar on the left; on the right, it is wholly alveolar and partly denti-alveolar and post-alveolar.

bʏsʃ (p.13)

The denti-alveolar wipe-off is larger on the extreme left than on the extreme right. The inward extension of wipe-off is only alveolar on both sides.

The articulation of 'ʃ' is denti-alveolar with the tip of the tongue down. In every palatogram of 'ʃ', there is a denti-alveolar wipe-off however small in size.

iii) t

As in all the denti-alveolar articulations, the bilateral wipe-off is a common feature in 't' palatograms. The denti-alveolar wipe-off is a feature that is equally common to all these palatograms, whether this wipe-off is complete or not; extended to other zones or restricted, as can be seen in the description of the following palatograms.

ti:h (p.14)

Wipe-off is denti-alveolar to post-alveolar. Scattered untouched patches. Bilateral wipe-off is wide.

tæ:b (p.14)

As in "ti:h"; less patches and narrower bilateral wipe-off.

tu:b (p.14)

The post-alveolar wipe-off is less than in "ti:h" and "tæ:b".

The denti-alveolar wipe-off is larger.

ɛati:q (p.14)

There is no continuous wipe-off across the alveolar zone. In the denti-alveolar zone, the continuous wipe-off is full of untouched patches, which give an impression of discontinuity.

ɛatæb (p.14)

At no phase is the wipe-off complete across the palatogram. There are scattered denti-alveolar touches.

fütu:h (p.14)

The denti-alveolar wipe-off, instead of being continuous across, is cut by a narrow untouched strip left of the median line. At no phase is there a continuous wipe-off across the palatogram.

jiti:h (p.15)

Denti-alveolar to pre-palatal wipe-off. In the mid-palatal and post-palatal zones, there is an inward extension on both sides of the bilateral wipe-off.

jietib (p.15)

Denti-alveolar to post-alveolar wipe-off. Bilateral wipe-off is wide.

xitma^h (p.15)

Denti-alveolar to post-alveolar wipe-off.

ʕatfa^h (p.15)

Denti-alveolar to post-alveolar wipe-off.

matbū:ʕ (p.15)

Denti-alveolar and alveolar wipe-off; a small post-alveolar touch occurs between the median and right lines.

mutʕib (p.15)

As in "matbū:ʕ", but post-alveolar touch appears on both sides of the median line.

mütʕa^h (p.16)

Denti-alveolar, alveolar and post-alveolar wipe-off. No zone is completely wiped-off.

ʕaxtim (p.16)

As in "mütʕab", with difference in detail of shape.

jietib (p.16)

All the alveolar, most of the denti-alveolar and a part of the post-alveolar zone is wiped-off. Bilateral wipe-off is wide.

jifti:h (p.16)

Denti-alveolar to pre-palatal wipe-off complete only in the alveolar zone. In the mid-palatal and post-palatal zone, there is an inward extension on both sides of the bilateral wipe-off.

ʃaftæ:h (p.16)

Denti-alveolar to post-alveolar wipe-off complete only in the alveolar zone.

ʃaɣtæ:b (p.16)

Denti-alveolar to post-alveolar wipe-off. In no zone it is complete. There is no wipe-off right across the palatogram in any zone.

baxtu:h (p.17)

Denti-alveolar and alveolar wipe-offs. Neither is complete.

ʃuxtu:h (p.17)

As in "baxtu", except that the wipe-off here is smaller in size.

maftu:h (p.17)

Denti-alveolar to post-alveolar wipe-off full of untouched patches. In no zone is it complete.

matteɣ (p.17)

Denti-alveolar to pre-palatal wipe-off; complete only in the alveolar zone.

ɣattæb (p.17)

Denti-alveolar to post-alveolar wipe-off; complete in the denti-alveolar and the alveolar zones.

huttu:h (p.17)

Denti-alveolar to post-alveolar wipe-off; complete only in the alveolar zone.

baxi:t (p.18)

Very little denti-alveolar wipe-off. Partial alveolar contact, and almost complete post-alveolar wipe-off. The bilateral wipe-off is very wide.

bitt (p.18)

Denti-alveolar contact is not complete as is the alveolar wipe-off. The post-alveolar wipe-off has scattered untouched patches.

batt (p.18)

Partial dental wipe-off, almost complete denti-alveolar, complete alveolar, almost complete post-alveolar and partial pre-palatal wipe-off.

fabat (p.18)

As in "batt". There are scattered untouched spots.

b:t (p.18)

No dental contact. Partial denti-alveolar, complete alveolar and almost complete post-alveolar wipe-off.

hu:t (p.18)

No dental contact; there are partial denti-alveolar, complete alveolar and some post-alveolar wipe-offs.

In every palatogram of 't' articulation, there is a degree of denti-alveolar wipe-off; 't' is classified as a denti-alveolar plosive consonant. In its articulation, the tip of the tongue is up. The distinction between "tip-up" and "tip-down" as related to palatography will be discussed later.

iv) d

The bilateral wipe-off is a common feature of all the palatograms of 'd', even with the open vowels. There is always a degree of denti-alveolar wipe-off as well. The following palatograms have been examined in relation to the place of articulation.

di:b (p.19)

Dental to pre-palatal wipe-off. The wipe-off is complete only in the alveolar zone. Lateral wipe-off is wide with a small inward extension in the mid-palatal and the post-palatal zones.

dæ:b (p.19)

Dental to post-alveolar wipe-off. Scattered untouched patches.

du:b (p.19)

Dental to post-alveolar wipe-off complete in the dental, denti-alveolar and the alveolar zones.

ɛadi:m (p.19)

Dental to post-alveolar wipe-off; complete only in the alveolar zones.

ɛadæ:b (p.19)

Dental to post-alveolar small scattered touches. At no phase is the wipe-off complete across the palatogram.

huv:m (p.19)

Denti-alveolar to post-alveolar wipe-off; complete only in denti-alveolar zone.

ʕa:dim (p.20)

Dental to post-alveolar wipe-off; scattered untouched patches.

ʕabad (p.20)

Dental to post-alveolar wipe-off; complete in all zones, except post-alveolar.

hidma h (p.20)

Dental to post-alveolar wipe-off; in no zone is it complete.

ʕadbah (p.20)

Dental to post-alveolar wipe-off; complete in dental and denti-alveolar zones. Some scattered untouched patches in the denti-alveolar and alveolar zones.

madbu:h (p.20)

Denti-alveolar to post-alveolar wipe-off; in no zone is it complete.

mudyam (p.20)

Denti-alveolar and alveolar wipe-off. In no zone is there a complete wipe-off across the palatogram.

hamdi, h (p.21)

Denti-alveolar and alveolar wipe-off. Some scattered untouched spots in the denti-alveolar zone. The alveolar wipe-off is not complete.

ʃabdæ:ɟ (p.21)

Dental to post-alveolar wipe-off. In no zone is this wipe-off complete.

ʃahdæ:b (p.21)

Dental, denti-alveolar and partly alveolar wipe-off. Scattered untouched spots.

maɦdu:f (p.21)

Denti-alveolar to post-alveolar wipe-off. In no zone is it complete.

waɦdu:h (p.21)

Dental to alveolar wipe-off. The alveolar wipe-off is not complete. An untouched spot occurs in the dental zone.

maɦdu:h (p.21)

Denti-alveolar and alveolar wipe-offs. Neither is complete.

baɟi:d (p.22)

Dental to pre-palatal wipe-off, complete in denti-alveolar and alveolar zones only. Scattered untouched spots all over.

ʒa:d (p.22)

Dental to post-alveolar wipe-off. In the dental and the post-alveolar zones, it is not complete. There are scattered untouched spots all over.

wüfū:d (p.22)

Complete dental and denti-alveolar, but partial alveolar wipe-off.

wɪddi:h (p.22)

Denti-alveolar, alveolar and partial post-alveolar wipe-off. Some untouched spots.

baddæŋ

Complete dental, denti-alveolar and alveolar wipe-off; also partially post-alveolar.

haddu:h (p.22)

Denti-alveolar, alveolar and partially post-alveolar wipe-off. Some scattered untouched spots.

dæbæh (p.23)

Dental, denti-alveolar and alveolar wipe-offs; the last is partial. Some scattered spots.

ɬadmaŋ (p.23)

Dental to post-alveolar wipe-off; the post-alveolar is not complete. Some scattered spots.

ɬamdæh (p.23)

Dental to post-alveolar wipe-off; complete only in the denti-alveolar zone. Some scattered spots in the dental and the denti-alveolar zones.

wɪdd (p.23)

Dental to a slight pre-palatal wipe-off. Not complete in the post-alveolar zone. Scattered patches.

hadd (p.23)

Denti-alveolar to a slight pre-palatal wipe-off; complete only in the alveolar zone.

v) s

As in the palatograms of 'ʃ', those of 's' have an inward extension in some areas between the denti-alveolar and post-alveolar zones. This inward extension is characteristic of the palatograms of all the A.D. fricatives, including those which are not denti-alveolar as will be seen later in the study of 'j' palatograms. Another characteristic here is the bilateral wipe-off common to all palatograms, even those with the open vowels. The following palatograms have been examined:

fusu:q (p.24)

Denti-alveolar and alveolar wipe-offs. The inward extension is alveolar. There is a patch in the denti-alveolar zone left of the left line and an untouched area right of the right line.

si:b (p.24)

Denti-alveolar to post-alveolar wipe-off. The inward extension of the wipe-off is chiefly in the alveolar zone. In the denti-alveolar zone the wipe-off is larger on the extreme left than on the extreme right. The bilateral wipe-off in all areas is wide.

sæ:b (p.24)

Denti-alveolar and alveolar wipe-offs. The inward extension is in the alveolar zone. In the denti-alveolar zone, the wipe-off on the extreme left is greater than on the extreme right.

su:q (p.24)

Denti-alveolar to slightly post-alveolar wipe-off. The inward extension of the wipe-off is both alveolar and denti-alveolar. On both sides of the denti-alveolar zone, the wipe-off is marked.

nasɪ:b (p.24)

Denti-alveolar to pre-palatal wipe-off. The inward extension of wipe-off is both alveolar and post-alveolar. The bilateral wipe-off is wide on both sides of the palatogram.

hasæb (p.24)

Denti-alveolar and alveolar wipe-off. The inward extension is alveolar. In the denti-alveolar zone, the wipe-off on the extreme left is greater than on the extreme right.

hʌsbʌh (p.25)

Denti-alveolar and alveolar wipe-off. The inward extension of wipe-off is alveolar. In the denti-alveolar zone, the wipe-off left of the left and right of the right lines is complete.

ʃasbʌ:b (p.25)

Denti-alveolar and alveolar wipe-offs. The inward extension is alveolar. In the denti-alveolar zone, the wipe-off on the extreme left is greater than on the extreme right.

fūsha,h (p.25)

Denti-alveolar and alveolar wipe-offs. The inward extension of wipe-off is alveolar and denti-alveolar. In the denti-alveolar zone, the wipe-off is complete on the left of the left line, but not on the opposite side.

faḥsib (p.25)

Dental to alveolar wipe-off. There is a complete wipe-off across the palatogram at the lateral incisor line.

fafsəh (p.25)

Denti-alveolar to post-alveolar wipe-off. The inward extension of wipe-off is alveolar. The post-alveolar wipe-off is slight, as is the denti-alveolar on both sides.

maḥsu:q (p.25)

Denti-alveolar to post-alveolar wipe-off. The inward extension is mainly alveolar. In the denti-alveolar zone, the wipe-off on the extreme left is greater than that on the extreme right.

bīssi:x (p.26)

Denti-alveolar to post-alveolar wipe-off. The inward extension is both denti-alveolar and alveolar. In the denti-alveolar zone, no wipe-off is left of the left or right of the right line. The bilateral wipe-off on both sides of the palatogram is wide.

massəh (p.26)

Denti-alveolar to post-alveolar wipe-off. The inward extension of wipe-off is alveolar. In the denti-alveolar zone, the wipe-off is greater on the extreme left than on the extreme right. The bilateral wipe-off is narrow, particularly on the left side of the palatogram.

hassu:h (p.26)

Denti-alveolar and alveolar wipe-offs. The inward extension on both sides is alveolar. The denti-alveolar wipe-off is marked on both sides.

habī:s (p.26)

Denti-alveolar to pre-palatal wipe-off. The inward extension is alveolar to pre-palatal on the right but only alveolar on the left. In the denti-alveolar zone, the wipe-off is greater on the extreme left than on the extreme right.

habas (p.26)

Denti-alveolar to post-alveolar wipe-off. The inward extension is alveolar and partly post-alveolar. In the denti-alveolar zone, the wipe-off on the extreme left is more marked than on the extreme right.

bü:s (p.26)

As in "habas", with difference in some detail of the general shape.

ʕaqsæ:m (p.27)

Mainly alveolar wipe-off, and very slightly denti-alveolar.

masbu:q (p.27)

Denti-alveolar and alveolar wipe-off. The inward extension is alveolar. In the denti-alveolar zone, the wipe-off on the extreme left is greater than on the extreme right.

htss (p.27)

Denti-alveolar to post-alveolar wipe-off. The inward extension is alveolar in the main. In the denti-alveolar zone, the wipe-off on the extreme left is complete, but not on the extreme right.

hyss (p.27)

Denti-alveolar and alveolar wipe-off. The inward extension is alveolar. In the denti-alveolar zone, the wipe-off on the left is complete but not so on the right.

vi) z

The same that has been said of the palatograms of 's' in general can be said of those of 'z'. The following palatograms have been studied in detail, however:

zi:h (p.28)

Denti-alveolar to post-alveolar wipe-off. The inward extension is mainly alveolar. Both sides of the denti-alveolar zone are wiped-off. Bilateral wipe-off is wide on both sides of the palatogram.

zæ:m (p.28)

Denti-alveolar to post-alveolar wipe-off. Inward extension is denti-alveolar and alveolar. Both sides of the denti-alveolar zone are wiped-off.

zu:y (p.28)

As in "zæ:m", with difference in detail of general shape.

hazɪ:ma h (p.28)

Denti-alveolar to pre-palatal wipe-off. Extension is mainly alveolar. In the denti-alveolar zone, the wipe-off on the left is more marked than on the right.

būzu:y (p.28)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly alveolar. Both sides of the denti-alveolar zone are wiped-off.

ɛazæm (p.28)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly alveolar. Both sides of the denti-alveolar zone are almost complete wiped-off.

zu:m (p.29)

Denti-alveolar and alveolar wipe-offs. Inward extension is alveolar and denti-alveolar. Both sides of the denti-alveolar zone are wiped-off.

hɪzbū h (p.29)

Denti-alveolar and alveolar wipe-offs. Inward extension is alveolar. In the denti-alveolar zone, the wipe-off on the extreme right is more marked than on the extreme left.

ʕazħam (p.29)

Denti-alveolar to post-alveolar wipe-off. Inward extension is alveolar and denti-alveolar. The left extreme area of the denti-alveolar zone is completely wiped-off; this is not so in the extreme right area.

maʕzu:m (p.29)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly alveolar. In the denti-alveolar zone, the wipe-off on the extreme left is more than on the extreme right.

xuzqu,h (p.29)

Wipe-off is slightly denti-alveolar and post-alveolar. It is extended inward in the alveolar zone.

mūzħa ,h (p.29)

Denti-alveolar to post-alveolar wipe-off. Inward extension is alveolar in the main, but also slightly denti-alveolar.

ħtʕæ:m (p.30)

Denti-alveolar to post-alveolar wipe-off. Inward extension is alveolar.

ʕaħzħim (p.30)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly alveolar, and partly denti-alveolar.

ʃahzæm (p.30)

Denti-alveolar and alveolar wipe-offs. Inward extension is alveolar.

ʃamzæ:h (p.30)

Denti-alveolar and alveolar wipe-offs. Inward extension is marked only on the right of the alveolar zone.

mʌɛzʊ:m (p.30)

Denti-alveolar to post-alveolar wipe-off. Inward extension is alveolar.

ɣamzy h (p.30)

Denti-alveolar to post-alveolar wipe-off. Inward extension appears in the three zones, denti-alveolar, alveolar and post-alveolar.

hazzæb (p.31)

Denti-alveolar, alveolar and post-alveolar wipe-off. Inward extension appears in the three zones.

ɛazzæm (p.31)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly in the alveolar and denti-alveolar zones.

hazzu:h (p.31)

As in "hazzæb" above.

xabɪ:z (p.31)

Denti-alveolar to pre-palatal wipe-off. Inward extension is mainly alveolar and post-alveolar.

YAMAZ (p.31)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly alveolar.

fū:z (p.31)

Denti-alveolar to post-alveolar wipe-off. Inward extension is mainly alveolar.

ɛtzz

As in "fū:z" above, with difference in general detail of

hazz (p.32)

[shape.

As previous.

hazz (p.32)

As previous.

c) Alveolar Articulation:

The lateral wipe-off is not a common feature of all the palatograms of this articulation; it depends on the vowels and the position, i.e. whether it is a position for tensity or for laxity. Nor is the completeness of the wipe-off across the palatogram a common feature, as will be seen below.

The following palatograms of the consonants n , l and r have been examined:

i) n

ni:b (p.33)

Denti-alveolar and alveolar wipe-off. The latter only is complete. The bilateral wipe-off is wide.

no:b (p.33)

Only alveolar wipe-off; even this is not complete.

ʒani:f (p.33)

Only alveolar wipe-off; complete except between the left and right lines.

manɔɛŋ (p.34)

Alveolar and very slightly post-alveolar wipe-off, which is discontinuous and generally of very light touch.

ʒanɛa:m (p.33)

Only alveolar wipe-off; not complete.

ʒanwa:ɛ (p.34)

Denti-alveolar to post-alveolar wipe-off; right lateral wipe-off only.

ʒab^əno: h (p.34)

Denti-alveolar to post-alveolar wipe-off; right lateral wipe-off only.

ʒahni:ku h (p.35)

Alveolar contact and wide bilateral wipe-off.

ʒahno:b (p.35)

Denti-alveolar and alveolar contact; no bilateral wipe-off.

ʒamf:n (p.35)

Denti-alveolar and alveolar contact; very wide bilateral wipe-off.

ɛafan (p.35)

Denti-alveolar and alveolar contact; right lateral wipe-off only.

hanni:hu,h (p.36)

Denti-alveolar and alveolar contact; very wide bilateral wipe-off.

hinn (p.36)

Denti-alveolar and alveolar contact; medium bilateral wipe-off.

ɛinn (p.36)

As in "hinn".

fann (p.36)

As in "hinn", but right lateral wipe-off only.

ii) l

li:f (p.37)

Alveolar and post-alveolar wipe-off. Lateral wipe-off is fairly wide.

lp:m (p.37)

Alveolar and post-alveolar wipe-off. No bilateral wipe-off.

ɛa:lim (p.37)

Denti-alveolar to post-alveolar wipe-off. Bilateral wipe-off is continuous on the right but only posterior to the second molar line on the left.

ʃalt:m (p.38)

Alveolar and post-alveolar wipe-off; wide bilateral touch.

malp:h (p.38)

Alveolar and post-alveolar wipe-off. No lateral wipe-off.

ɛtlt h (p.38)

Denti-alveolar to post-alveolar wipe-off. Bilateral wipe-off is fairly wide.

ʃalmæʔ (p.38)

Alveolar to pre-palatal wipe-off. No bilateral contact.

htlt h (p.39)

Alveolar and slightly denti-alveolar contact. The bilateral wipe-off is fairly wide.

ʃamlp:h (p.39)

Alveolar to mid-palatal wipe-off. No bilateral contact.

mɪllɪ:m (p.39)

Denti-alveolar to post-alveolar wipe-off. Bilateral contact is very wide.

mallvʰ (p.39)

Alveolar to mid-palatal wipe-off. No bilateral contact.

ɛʌ:qɪl (p.40)

Alveolar and post-alveolar wipe-offs. Medium bilateral contact.

fɪ:l (p.40)

Alveolar and post-alveolar wipe-offs. Very wide bilateral contact.

ʃaməl (p.40)

Alveolar to mid-palatal wipe-off. No bilateral contact.

hʃl (p.41)

Alveolar and post-alveolar wipe-offs. Fairly wide bilateral contact.

maɪl (p.41)

Alveolar to mid-palatal wipe-off. No bilateral contact.

iii) r

ri:h (p.42)

Bilateral wipe-off extends inwards on both sides at the canine line.

ro:h (p.42)

Bilateral post-alveolar to mid-palatal wipe-off on both sides; slightly extended inwards.

ɣari:b (p.42)

Bilateral wipe-off with an alveolar inward extension on both sides.

waɾp:ɪ (p.42)

Slight touch at the left of the post alveolar zone. Lateral post-alveolar to pre-palatal wipe-off on the right, with an appreciable extension inwards.

mūri:h (p.43)

As in "ri:h"

ha:roɪ (p.43)

Only a very slight touch at the right of the alveolar zone.

harom (p.43)

Slight alveolar touch on the extreme sides of the alveolar zone..

haro:m (p.43)

As in "harom".

firqah (p.43)

Very slight touches at the extreme sides of the alveolar zone. Lateral wipe-off appears in the three palatal zones.

yirba:q (p.44)

Discontinuous alveolar wipe-off. Bilateral palatal contact.

marhu:m (p.44)

Discontinuous alveolar and post-alveolar wipe-off at the back of pre-palatal on the right.

farha h (p.44)

As in "marhu:m

muyri:h (p.45)

Bilateral wipe-off with an inward extension at the canine line.

hamro: h (p.45)

Very slight alveolar and post-alveolar touches which are not complete across the palatogram.

bī:r (p.45)

As in "muyri:h

ba:r (p.46)

Alveolar to mid-palatal bilateral wipe-off with an inward extension in the post-alveolar and alveolar zones, but not complete across the palatogram.

harrom (p.46)

Slight alveolar and post-alveolar touch on the left, but alveolar to mid-palatal lateral wipe-off on the right with an alveolar and post-alveolar inward extension reaching half-way between the right and the median lines in the alveolar zone.

b^hrr (p.46)

Alveolar to back-palatal bilateral wipe-off, which is comparatively narrower in the three palatal zones. This wipe-off widens at the left of the post-alveolar and alveolar zones to a point half-way between the left and median lines, but remains narrow at the right of these two zones. There is also an isolated alveolar touch between the right and the median lines.

d) The Post-alveolar Articulations:

As in the palatograms of alveolar articulations, those of post-alveolar articulations may or may not have a lateral wipe-off. Similarly, the post-alveolar wipe-off may extend back to pre-palatal or front to alveolar. In some cases it is not complete across the palatogram. The

following palatograms of η , l and r , have been studied.

1) η

$\eta u : h$ (p.33)

Post-alveolar and alveolar wipe-offs left of the left and right of the right line, but only alveolar between these two lines. Bilateral wipe-off is not wide.

$xur u : \varepsilon$ (p.33)

Alveolar to pre-palatal wipe-off on both sides, but only alveolar between the left and right lines. No bilateral wipe-off.

$m u \eta \varepsilon a m$ (p.34)

Alveolar to pre-palatal wipe-off on both sides, but only alveolar between the left and right line. At the median line, the wipe-off narrows to a very slender gap. No bilateral wipe-off.

$xu : \eta h r u m$ (p.34)

Alveolar to pre-palatal bilateral wipe-off, which is extended, but not complete across the alveolar zone. No bilateral wipe-off.

$m a m m u : \varepsilon$ (p.35)

Alveolar between the left and the right lines, but post-alveolar on both sides. Bilateral wipe-off is not wide.

$xu : \eta$

The same as in " $m a m m u : \varepsilon$ ", but with retroflexion.

müŋŋü (p.36)

Denti-alveolar to post-alveolar wipe-off. Bilateral contact is not wide.

müŋŋ

Denti-alveolar to post-alveolar wipe-off. Bilateral contact is wider than in "müŋŋü".

ii) l

lo:m (p.37)

Alveolar to pre-palatal on both sides but alveolar to post-alveolar between the left and the right lines. No bilateral contact.

lü:m (p.37)

As in "lo:m", but there is a lateral wipe-off on the right.

salü:f (p.38)

As in "lü:m" above.

ɛulü:m (p.37)

Alveolar to post-alveolar on the left, but alveolar to mid-palatal on the right. Lateral wipe-off on the right. Between the left and the right lines, the wipe-off is alveolar only.

müŋhΔq (p.38)

Post-alveolar and pre-palatal on the left, but post-alveolar to mid-palatal on the right. Retroflex. Between

the left and the right lines, there is a post-alveolar wipe-off only.

mamɭü:h (p.39)

Alveolar to pre-palatal on the left and alveolar merging with the lateral wipe-off on the right. Between the left and right lines, the wipe-off is alveolar only.

büɭɭü,h (p.39)

Alveolar pre-palatal on the left and between the left and right lines. At the right side, it merges with the lateral wipe-off. Retroflex.

maɣɭü:f (p.40)

Alveolar to pre-palatal on the left; alveolar to post-alveolar between the left and right lines, and alveolar to mid-palatal on the right. No bilateral wipe-off.

fü:ɭhüm (p.40)

Alveolar to mid-palatal on the left; alveolar but mainly post-alveolar between the left and right lines, where the wipe-off merges with the lateral wipe-off on the right. Retroflex.

fü:ɭ (p.40)

Post-alveolar to pre-palatal all points. At the right, it merges with the lateral wipe-off. Retroflex.

büɭɭü:h (p.41)

Alveolar to mid-palatal on the left; alveolar to post-alveolar between the left and right lines where it merges with the lateral wipe-off on the right. Retroflex.

fuɭɭ (p.41)

Post-alveolar to mid-palatal on the left; post-alveolar to pre-palatal between the left and right lines where it merges with the lateral wipe-off on the right. Retroflex.

iii) ɭ

ɸu:h (p.42)

Post-alveolar to mid-palatal on the left, and post-alveolar merging with the lateral wipe-off on the right. There is no wipe-off between the left and right lines.

quɸu:h (p.42)

Alveolar to mid-palatal on the left and alveolar to pre-palatal on the right; only alveolar wipe-off between the median and right lines. There is no wipe-off between the median and left lines.

huɸu:b (p.43)

Slight alveolar and post-alveolar touches on the left and alveolar to mid-palatal wipe-off on the right. Between the left and the right lines there is no wipe-off.

huɸma h (p.44)

Slight alveolar to pre-palatal touches on the left, and alveolar to mid-palatal wipe-off on the right. There is no wipe-off between the left and right lines.

bɸɸma h (p.44)

Post-alveolar to pre-palatal wipe-off on the left, and post-alveolar to mid-palatal wipe-off on the right;

between the left and right lines there is no touch.

māhpū:m (p.45)

A very slight touch on the right of the right line in the post-alveolar zone.

ɛū:ɾ (p.45)

Alveolar to back-palatal on both sides. There is no wipe-off between the left and right lines.

mūrr (p.45)

As in "ɛū:ɾ" above.

mūrrū: (p.46)

Alveolar to back-palatal wipe-off; wider on the right than on the left, with a post-alveolar and alveolar extension on both sides. This extension reaches very near the median line, both on the right and on the left.

mūrr (p.46)

The wipe-off is also bilateral with a post-alveolar and alveolar extension inwards towards the median line. On the left, this extension ceases before reaching the left line, but on the right, it reaches half-way between the right and the median lines. The width of the lateral wipe-off on both sides is approximately equal.

c) The Palatal Articulations:

In the palatograms of palatal articulation, the main feature is a bilateral wipe-off which may be confined to the back-palatal zone or a part of it, and may extend according

to position as far front as denti-alveolar. In the articulation of palatal plosives, as well as in that of the front-close vowels in cvv final in the spoken group, the lateral wipe-offs on either side of the palatogram may be joined together with a back-palatal wipe-off across the palatogram. A characteristic wipe-off of the front-close vowels in the above given position is to leave an untouched area surrounded by wipe-off and covering, in most cases, the middle of the post-alveolar, pre-palatal and mid-palatal zones, i.e. within the rectangle formed by the left and the right lines, and the third molar and the canine lines. This will be treated in detail later. The following palatograms have been examined:

1. c

cima:ma,h (p.47)

Back-palatal to denti-alveolar bilateral wipe-off, joined at the rear of the back-palatal zone by a line of wipe-off across the palatogram.

haci:m (p.47)

Similar but broader wipe-off than in "cima:ma". The connecting wipe-off in the back palatal zone is also wider.

cü:b (p.47)

Back palatal wipe-off only on the extreme left, but back and mid-palatal contact right of the right line.

ɛucū:f (p.47)

No wipe-off.

hɪcma,h (p.47)

Back palatal to alveolar bilateral wipe-off connected in the back palatal zone by a wide wipe-off across the palatogram, not wholly covering the back palatal zone.

ʔahci:bū,h (p.47)

As in "hɪcma" but wider on both sides.

maɛcū:f (p.48)

A small back palatal wipe-off on the right side.

būcɛ (p.48)

As in "maɛcū:f"

fɪ:c (p.48)

As in "ʔahci:bū", but here the wipe-off is extended to the denti-alveolar zone as well as the alveolar.

bū:c (p.48)

Back-palatal wipe-off in the extreme right.

fūccū:h (p.48)

As in "bū:c" but smaller in size.

fūcc

Back-palatal on the left, but back and mid-palatal wipe-off on the right.

2. ɟ

ɟi:m (p.49)

Back-palatal to alveolar bilateral wipe-off joined at the back palatal zone by a wide contact.

ʃi:fʌ,ʰ (p.49)

As in "ʃi:m"

ʃɛ:b (p.49)

Back and mid-palatal on the left, but back palatal to post-alveolar on the right.

ʃü:ɛ ʰ (p.49)

Back-palatal on the left, but back and mid-palatal wipe-offs on the right.

ɬaʃi:b (p.49)

Almost all the back palatal zone is wiped off. The bilateral wipe-off reaches to the denti-alveolar zone.

wüʃü:h (p.49)

Slight back-palatal contacts on both sides.

ɬa:ʃ^əbʌ,ʰ (p.50)

Not clear.

maʃmü:ɛ ʰ (p.50)

Not clear.

wüʃü:h (p.

No wipe-off.

wiʃha ʰ (p.50)

Back-palatal and mid-palatal on the left, but back-palatal to post-alveolar on the right.

ɬaʃmaɛ ʰ (p.50).

Slight touch on the left and the right of the back palatal zone.

ʕaɛʔib (p.51)

Back palatal to alveolar wipe-off on both sides.

ʕaɛʔem (p.51)

Back-palatal and slightly mid-palatal wipe-off on both sides.

maʔju:ɛ (p.51)

Slight back-palatal touch on both sides.

baɲʔ:ʃ (p.51)

The back-palatal zone is almost wholly wiped-off. The lateral wipe-off reaches the post-alveolar zone on the left and the alveolar on the right.

ɛa:ʃ (p.51)

Back-palatal to mid-palatal wipe-off on the left, but back-palatal to pre-palatal on the right. The pre-palatal and mid-palatal wipe-off on the right is covered with scattered spots.

hɛʔʃʃ (p.52)

Back-palatal to post-alveolar bilateral wipe-off. The back-palatal zone is almost wholly wiped-off.

haʔʃ (p.52)

Back and mid-palatal bilateral wipe-off.

hɛʔʃʃ (p.52)

Back-palatal touch on both sides.

3 ʃ

ʃi:b

Wide bilateral wipe-off; inward extension is post-

alveolar and alveolar.

ʃü:f (p.53)

Wide bilateral wipe-off, very slight post-alveolar inward extension of wipe-off.

ħaʃɛm (p.53)

Medium width of bilateral wipe-off; post-alveolar and alveolar inward extension is greater on the right than on the left.

maʃɛ: ʰ (p.53)

As in "ħaʃɛm"

ʃaʃbʌɛ ʔ (p.53)

Medium width of bilateral wipe-off; very slight post-alveolar inward extension of wipe-off.

ʃaʃɛa:b (p.53)

As in "ʃaʃbʌɛ".

ʃʌxʃiʃ (p.54)

Wide bilateral wipe-off; post-alveolar and slightly alveolar inward extension of the wipe-off.

ʃaʃʃɛ: ʰ (p.54)

Wipe-off is wider on the left than on the right; the inward extension is on the left and is post-alveolar and alveolar.

ʃaɛʃɛ:b (p.54)

Wide bilateral wipe-off; inward extension is post-alveolar and alveolar.

ma:fi:j (p.54)

Very wide bilateral wipe-off; inward extension is post-alveolar and slightly alveolar.

habaf (p.54)

Rather wide bilateral wipe-off; inward extension of wipe-off is post-alveolar and alveolar.

huffi:h (p.55)

Wide bilateral wipe-off; inward extension of wipe-off is post-alveolar and slightly alveolar.

majfe: h (p.55)

Rather wide bilateral wipe-off; inward extension of wipe-off is post-alveolar and alveolar.

haff (p.55)

Rather wide bilateral wipe-off; inward extension of wipe-off is post-alveolar and alveolar.

huff (p.55)

Wide bilateral wipe-off; inward extension of wipe-off is post-alveolar and alveolar.

4. 1

ʕamjɛɛ ʔ (p.56)

Narrow bilateral wipe-off reaching as far front as the alveolar zone.

ʕajfaɛ ʔ (p.56)

Narrow bilateral wipe-off, reaching as far front as pre-palatal on the left and post-alveolar on the right.

jũ:h (p.56)

Rather wide bilateral wipe-off reaching as far front as alveolar.

jo:mũ^h (p.56)

Narrow bilateral wipe-off reaching as far front as alveolar.

ɕujũ:b (p.56)

Narrow bilateral wipe-off reaching as far front as pre-palatal on the left and post-alveolar on the right.

ʃabjɛ:m (p.57)

Very narrow bilateral wipe-off reaching as far front as denti-alveolar.

mʌɕ jũ:b (p.57)

Rather wide bilateral wipe-off reaching as far front as denti-alveolar.

wʌɕj (p.57)

Very wide bilateral wipe-off reaching as far front as alveolar; back palatal inward extension.

ɕumj (p.57)

As in "wʌɕj".

xatɕjjɛ^h (p.57)

Denti-alveolar and alveolar wipe-off; bilateral wipe-off is very wide with an inward extension at the back and mid-palatal zones.

ʔajjɛb (p.57)

Narrow bilateral wipe-off reaching as far front as denti-alveolar.

2. Tip Up and Tip Down

This basic opposition in articulation can be established between the A.D. consonants in general and between the denti-alveolar plosives and fricatives in particular. In general, the pre-palatal plosives and liquids articulated by the front of the tongue have the tip of the tongue raised up in their articulation, while all other consonants whether articulated or not by the tongue have the tip of the tongue lowered. The former group is $\text{q}, \text{ɕ}, \text{d}, \text{t}, \text{ʈ}, \text{t}, \text{n}, \text{l}, \text{r}, \text{ŋ}, \text{ɭ}, \text{ɽ}, \text{ɳ}, \text{ɽ}$ and $\text{n}, \text{l}, \text{n}, \text{l}$ when these last four are followed by a plosive. The remaining consonants have the tip down.

The denti-alveolar articulations in particular can be studied in the light of palatography in relation to this opposition. In almost all the palatograms of the denti-alveolar plosives, a denti-alveolar wipe-off across the palatogram is found, as in the palatograms of t, t and d studied above. But in all the palatograms of the denti-alveolar fricatives, no wipe-off is found across the palatogram at any point. These two types of wipe-offs can be correlated to the plosive and the fricatives respectively.

3. Tensity and Laxity

This feature is studied in the detailed description of consonants but here it can be stated that the wipe-offs of a given articulation tend to decrease in size according to the following order of positions of the articulation:

1. Double final in the S. G.
2. Single " " " "
3. Double medial " " " "
4. Initial " " " "
5. Post-consonantal in the S. G.
6. Penultimate " " "
7. Pre-consonantal " " "
8. Intervocalic " " "

4. Prosodies and Palatograms

The very fact that the size and general shape of a wipe-off corresponds to a feature of a given position (as in tensity and laxity above) indicates that some prosodic features can be abstracted from sets of related and comparable palatograms. Apart from tensity and laxity of articulation, the following prosodic features have been abstracted (apart from perception) from such comparisons.

1. Diphthongization of final long front-close vowels in cvv ; for example, palatograms in Palatogram Appendix, pp. 58 - 62, in most of which a complete wipe-off of the back palate zone suggests a closer tongue position than for

that of the front-close vowels in other positions, the palatograms of which can be found throughout the Appendix.

2. In multi-contact palatograms, wipe-offs are different in shape from those of the same articulation in uni-contact palatograms, e.g.

Compare: $q\dot{a}nni:$ (p.68) with $q\dot{a}:f$ (p.1) and $\text{ʕahni:h}\dot{u}$ (p.35)

$q\dot{u}r\dot{u}:f$ (p.68) with $q\dot{u}ha:\dot{h}$ (p.1) and $q\dot{u}r\dot{u}:h$ (p.42)

$\text{ʕ}\epsilon d\dot{a}l$ (p.68) with $\text{ʕ}\epsilon:b$ (p.49) and $\text{ʕad}\dot{a}b$ (p.23)

and also $\text{ʕam}\dot{a}l$ (p.40)

$q\dot{a}r\dot{u}:c$ (p.68) with $q\dot{a}:\epsilon\dot{h}$ (p.1)

$m\dot{u}r\dot{u}:c$ (p.46)

$b\dot{u}:c$ (p.48)

$\text{ʕ}\epsilon r\dot{u}:d\dot{a} \dot{h}$ (p.68) with $\text{ʕ}\epsilon:b$ (p.49)

$har\dot{u}m$ (p.43)

$\text{ʕad}\dot{a}b$ (p.23)

$\text{ʕ}\epsilon \text{ʔ}\dot{u}:d\dot{a} \dot{h}$ (p.69) with $\text{ʕ}\epsilon:b$ (p.49)

$\text{ʕu} \text{ʔ}\dot{u}:f$ (p.37)

$\text{ʕad}\dot{a}b$ (p.23)

$c\dot{a}t\dot{a}:b$ (p.69) with $c\dot{a}m\dot{a}:m\dot{a} \dot{h}$ (p.47)

$\text{ʕa} \text{ʔ}t\dot{a}:b$ (p.16)

This difference is thought to be in relation to the sequence. It is clear that a spoken group is organically accompanied by a continuous gliding from one articulation to the other, and a transitional phase between two articulations is related to both the preceding and following phases. In

this very wide sense, every two articulations in an immediate sequence are homorganic. This is a prosody of a particular type; and palatography perhaps, besides cine-radiography, is the technique for abstracting such prosodic features.

Kymography

The instrumental technique of kymography can be applied in the investigation of several phases of an utterance, i.e. in examining features which are in more than one position in the continuum. A kymogram is a line of tracings from which such features can be abstracted. One cannot point out a plosion, a friction or an aspiration in the kymogram; what can be pointed out is a type of displacement in the general profile of the line of tracings. These types of displacement, differing from each other, can be correlated with a feature in the utterance.

In examining a kymogram, the following terms will be used:

1. Line at rest: an imaginary line from which the line of tracing is a departure. Such a line could be drawn by the style, in zero agitation, on the revolving object.

2. Line of tracings: from which features can be abstracted. In this line, one speaks of

- a) a wave-form or modulation, which is related to voice

- and b) excursion, i.e. the extent of departure from rest, which may be related to tensity and laxity, through the relation between excursion and air-pressure.

For the purpose of this work, kymography has been used in investigating the following features:

1. Plosion and zero-plosion.
2. Voicing and unvoicing.
3. Tensity and laxity.
4. Aspiration.
5. Glottalization.
6. Nasalization.

The following is an attempt to abstract such features from the kymograms submitted in the Appendix.

1. Plosion and zero-plosion.

Plosion is the release after the occlusion or closure of the air stream at some point; the duration of this occlusion is known as the stop. The term "zero-plosion", or "no-plosion", denotes the absence of the release of a plosive consonant preceding another of a different articulation in an immediate junction. This excludes doubling, which requires one occlusion, one stop and one release for the double consonant, as can be understood from the following kymograms:

No. 2 - zadqa^h

4 - zat^htal

and 11 - sa^hssal

Zero-plosion also excludes the non-release of the first of two consecutive plosive consonants having the same place of articulation and pronounced in the manner of a double

consonant, as may be elicited from kymogram No. 55 -

əddəbʌh (ʃ. ətdabʌh)

The preceding consonant in such a junction as described above may or may not be released, depending on the place of articulation of each. For example, the following plosives are released in such junction as shown in the kymograms given below.

c - t	in kymo. No. 6	-	ʃactər
ʃ - b	" " "	12	- mʌʃəbū:ɾ
d - ʃ	" " "	14	- jɪdʃab
d - q	" " "	15	- mʌdqu:q
ʃ - ʃ	" " "	16	- jɪʃʃar
b - c	" " "	23	- ʃabci:
q - ʃ	" " "	24	- dʌ:ʃʌqʃʌxu:h
t - ʃ	" " "	25	- ətʃasər

In the following kymograms, however, the preceding plosive is not released; it is with zero-plosion:

q - t	in kymo. No. 8	-	mʌqtʌ:ɛ ʃ
q - b	" " "	9	- mʌqbū:ɾ
q - t	" " "	13	- qʌbaqtəlp:tə ʃ,
b - t	" " "	61	- ʃabtər
q - t	" " "	81	- mʌqtʌ:ɾ
q - ʃ	" " "	88	- səraʃqʃemʌlɜ:n

Such preceding plosive consonants may be pronounced with an incomplete occlusion. This can be understood from

the tracings of :

q - d	in kymo. No.	1	-	jiqđi:
ɣ - b	" "	"	26	- jifbA: h,
ɣ - t	" "	"	27	- jiftu:
ɣ - ʃ	" "	"	87	- mAfʃu:ɾ
ɣ - d	" "	"	89	- mAfdu:ŋ

Voicing and Unvoicing.

For the investigation of the voicing of voiceless consonants and the unvoicing of the voiced in specific contexts, kymograms Nos. 12 - 79 are given. In these, there are the lines of mouth tracings (M) and larynx tracings (L). These provide a double check on voicing and unvoicing. These kymograms are given here in detail with a short account of each.

Kymo. No. 12 - maɟ^abũ:r

Both 'ɟ' and 'b' are wholly voiced with an anaptyctic vowel between: 'r' is partially unvoiced.

Kymo. No. 13 - qabɑqtəlb:tə (h)

The 'q' is partially unvoiced.

Kymo. No. 14 - jidɬab

Both 'd' and 'ɬ' are voiced; the latter being a creak; 'b' is partially unvoiced and without release.

Kymo. No. 15 - maɖqu:q

The 'd' is partially unvoiced, and its release is aspirated.

Kymo. No. 16 - jiɟɬar

Both 'ɟ' and 'ɬ' are voiced; the latter being a creak; 'r' is partially unvoiced.

Kymo. No. 17 - xaɖaɛ (h)

Initial 'x' correlates with a strong friction; in the laryngeal tracings of 'x', there is a wave form which is not

regular enough to be interpreted as voice. Such wave form may be the result of the strong friction. The lack of duration of 'ɛ' tracings may be related to the glottalization of the consonant in this position.

Kymo. No. 18 - faq^əl

Final 'l' is partially unvoiced.

Kymo. No. 19 - haqq .

Final double 'qq' is partially unvoiced; long duration and slight release.

Kymo. No. 20 - haɬab

Final 'b' is partially unvoiced; long duration and an appreciable release.

Kymo. No. 21 - ɬafa: (h)

Final aspiration.

Kymo. No. 22 - maʃcʊ:ɭ

The 'ʃ' is voiced and final 'ɭ' is partially unvoiced.

Kymo. No. 23 - ʃabci

The 'b' is wholly voiced and 'c' is strongly aspirated.

Kymo. No. 24 - qa:jaqʃaxu:h

The glottal 'ʃ' is slightly voiced.

Kymo. No. 25 - ətʃasər

The glottal 'ʃ' is voiced and final 'r' is partially unvoiced.

Kymo. No. 26 - jiʃba: (h)

The 'ʃ' is voiced.

Kymo. No. 27 - jiʃtu

The 'ʃ' is voiced.

Kymo. No. 28 - ʃaʃʏʌ:l

Palatal 'ʃ' is voiceless and final 'l' is partially unvoiced.

Kymo. No. 29 - ʃaʃʃɛ:r

Palatal 'ʃ' is voiceless and final 'r' is partially unvoiced.

Kymo. No. 30 - ma:fʃ:ʒæjʃi ʰ

Palatal 'ʒ' is wholly voiced and likewise intervocalic 'f'. The voicing of 'f' in such a position is not a regular feature, although it is always lax in articulation.

Kymo. No. 31 - masɔv:d

The 's' is voiceless; final 'd' is partially unvoiced and its release is aspirated.

Kymo. No. 32 - maʃdʊ:d

The 'ʃ' is voiceless and final 'd' is as in Kymo. No. 31.

Kymo. No. 33 - maʃdʊ:d

Pre-consonantal 'ʃ' is partially voiced and final 'd' is as in Kymo. No. 31.

Kymo. No. 34 - rafaʒzʒ:nb:b

Pre-consonantal 'z' is wholly voiced and final 'b' is partially unvoiced.

Kymo. No. 35 - ʒɛrɒŋʒali:

The 'h' is voiceless.

Kymo. No. 36 - jivzæɣ̥

Pre-consonantal 'v' is wholly voiced. The lack of duration in 'ɣ̥' tracings may be related to glottalization.

Kymo. No. 37 - ʕafɣa:nt̪

Pre-consonantal 'f' is voiceless.

Kymo. No. 38 - jif^əroħ

The 'f' is voiceless, followed by anaptyxis.

Kymo. No. 39 - jif^ənt̪

The 'f' is slightly and partially voiced and followed by anaptyxis.

Kymo. No. 40 - ʕafwa:j̥

The 'f' is voiceless; final 'j̥' is partially unvoiced.

Kymo. No. 41 - ʕafjɛd̪

The 'f' is voiceless and final 'd̪' is partially unvoiced.

Kymo. No. 42 - jifjɛɣ̥

The 'f' is voiced. Lack of duration in 'ɣ̥' tracings may be related to glottalization.

Kymo. No. 43 - ʕafdi:

The 'f' is voiced.

Kymo. No. 44 - jifd̪aħ

As Kymo. No. 43

Kymo. No. 45 - ʕazfat̪

The denti-alveolar 'z' is wholly voiced.

Kymo. No. 46 - mazcū:m

The 'z' is partially unvoiced.

Kymo. No. 47 - mazh

The 'z' is partially unvoiced.

Kymo. No. 48 - nozɸ

The 'z' is wholly voiced.

Kymo. No. 49 - yamz

The 'z' is wholly voiced.

Kymo. No. 50 - gazi:z

Final 'z' is partially unvoiced.

Kymo. No. 51 - habazzənob

The succession 'zz' is wholly voiced.

Kymo. No. 52 - jiqhaɸ

The 'h' tracings show a degree of voicing.

Kymo. No. 53 - mahrū:q

The 'h' is voiced.

Kymo. No. 54 - jerɸhɸum

The 'h' is partially voiced and 'h' is unvoiced.

Kymo. No. 55 - əddəbɸh

The succession 'dd' is wholly voiced, whilst final 'h' is partially so.

Kymo. No. 56 - əhtəmm

The 'h' is wholly voiced.

Kymo. No. 57 - mahfū:m

The 'h' is unvoiced.

Kymo. No. 58 - ʃac^əroh

Palatal 'c' is voiceless, aspirated and followed by anaptyxis. Final 'h' is partially unvoiced.

Kymo. No. 59 - ʃahlb:m

The 'h' is voiced.

Kymo. No. 60 - jifham

Neither 'f' nor 'h' are voiced.

Kymo. No. 61 - ʃabtər

The 'b' is wholly voiced and final 'r' partially unvoiced.

Kymo. No. 62 - ʃaʃʒa:r

Palatal 'ʃ' is voiceless; final 'r' is partially unvoiced.

Kymo. No. 63 - rbmj

A certain displacement of the style before the beginning of the 'r' tracings may be related to a glottal release. Initial 'r' is described as glottalized.

Kymo. No. 64 - ʒafw

Final 'w' is partially unvoiced.

Kymo. No. 65 - cesb

Final 'b' is partially unvoiced.

Kymo. No. 66 - r^hcen

Palatal 'c' is aspirated and followed by anaptyxis. The final nasal partially unvoiced.

Kymo. No. 67 - lphd

Pharyngeal 'h' is voiceless and final 'd' is partially unvoiced.

Kymo. No. 68 - mahd

Pharyngeal 'h' is slightly voiced and final 'd' is partially unvoiced.

Kymo. No. 69 - qavz

Labio-dental 'v' is wholly voiced and final 'z' is partially unvoiced.

Kymo. No. 70 - laym

Velar 'y' is wholly voiced.

Kymo. No. 71 - npsj

The 's' is voiceless and final 'j' is partially unvoiced.

Kymo. No. 72 - qut^ən

The 't' is voiceless and followed by anaptyxis. Final 'n' is partially unvoiced.

Kymo. No. 73 - ɛΛq^əl

Uvular 'q' is voiceless and followed by anaptyxis. Final 'l' is partially unvoiced.

Kymo. No. 74 - qas^ər

The 's' is voiceless. Neither the anaptyctic vowel nor final 'r' are clear in the tracings.

Kymo. No. 75 - xarɔjettitmaʃfɛ:h

The initial of the syllable 'tit' is strongly aspirated, and the ultimate is voiced.

Kymo. No. 76 - həfər

Final 'r' is partially unvoiced and is preceded by anaptyxis.

Kymo. No. 77 - bəhər

Neither the anaptyctic vowel nor final 'r' is clear.

Kymo. No. 78 - fəqər

Final 'r' is partially unvoiced and is preceded by anaptyxis.

Kymo. No. 79 - fəxər

As in Kymo. No. 77.

3. Tensity and laxity.

Relating kymograph-tracings to tensity and laxity of articulation is a procedure to be employed with reservation. To relate tracings to such features, one or both of the following points have to be taken into consideration:

1. The duration
- and 2. The extent of excursion.

The criterion is, then, the longer the duration, the tenser the articulation and the smaller the excursion, the laxer such articulation. Such is the principle followed here in interpreting the tracing in the kymograms. It must be remembered that tensity and laxity are features of positions rather than sounds. The positions possible for a consonantal sound in A.D. are eight, which are graded from tensest to laxest, as follows:

1. Double final
2. Single final
3. Double medial
4. initial
5. Post-consonantal
6. Penultimate in final cvcc in S.G.
7. Pre-consonantal
8. Intervocalic.

The tracings of final articulations show longer duration than in any other position; this can be seen in the

following kymograms:

ɾ	in	Kymo.	No.	12	-	maɾ ^ə bū:ɾ
q	"	"	"	15	-	maɖqu:q
r	"	"	"	16	-	jiɾɾar
dɖ	"	"	"	19	-	haɖɖ
b	"	"	"	20	-	haɾab
d	"	"	"	31	-	maɖdu:d
	"	"	"	32	-	maɟdu:d
	"	"	"	33	-	maɟdu:d
c	"	"	"	52	-	jiɖhac
q	"	"	"	53	-	ma ^h əɾū:q
b	"	"	"	65	-	cɛsb
ɖ	"	"	"	68	-	ma ^h ɖ

The shortest durations are those of intervocalic articulations. Compare the preceding examples with the following:

c	in	Kymo.	No.	5	-	ɬacɛl
t	"	"	"	7	-	cɛtəb
and	"	"	"	13	-	qabɖɖtəɭp:tə (h)
ɖ	"	"	"	17	-	xaɖaɟɬ
t	"	"	"	20	-	haɾab
f	"	"	"	21	-	ɬafɬ:(h)
s	"	"	"	25	-	ɛɬɬasər
n	"	"	"	34	-	raɬaɟzɬ:nɔb
and	"	"	"	37	-	ɬafɬɬ:ni:

z	in Kymo. No. 50 -	ɛazi:z
r and ʃ	" " " 75 -	xarɔʃettitmaʃʃɛ:ɪh,
h	" " " 85 -	ʃahan
r	" " " 88 -	səraɔʃɛmaɪɜ:n

Similarly, a comparison can be made between excursions in double medial and in intervocalic positions. Excursions of the first position are greater than those of the second. Compare, for example:

dɔ	in Kymo. No. 2 -	ɛaɔɔa ɪh
tɪ	" " " 4 -	ɛaɪɪal
dɔ	" " " 55 -	əddəbɪh

with those of

c	in Kymo. No. 5 -	ɛacɛl
t	" " " 10 -	səraɔɔcitə:b
ɔ	" " " 17 -	xaɔaɛ ɪh

4. Aspiration

This feature is associated in medial position with certain sounds and in final position with sounds and syllables. In medial position, aspiration is a feature of t , c and with t̥ in an immediate junction with a following f or h , e.g.

t̥	in Kymo.	No.	3	-	jɪt̥fɪ:
c	" "	"	5	-	ʃacɛl
and with t	" "	"	6	-	ʃactər
and both	" "	"	7	-	cɛtəb
and	" "	"	10	-	səraqcitə:b
t	" "	"	13	-	qabəqtəlp:tə (h)
c	" "	"	22	-	mʌʃcū:l
and	" "	"	23	-	ʃabci:
t	" "	"	25	-	ətʃasər
and	" "	"	27	-	jɪʃtu:
c	" "	"	46	-	mʌzcū:m
and	" "	"	58	-	ʃac ^ə rɒh
t	" "	"	61	-	ʃabtər
c	" "	"	65	-	cɛsb
and	" "	"	66	-	rūc ^ə n
t	" "	"	75	-	xarɒjɛttitmʌʃʃɛ: (h)
and	" "	"	80	-	mʌt ^ə rū:c
t̥	" "	"	86	-	jɪt̥hən

In final position:

a) the voiceless plosive consonants are aspirated,
e.g. q in Kymo. No. 15 - ma^hdqu:q

c " " " 80 - ma^ht^herü:c

and b) the open syllables with open vowels are also aspirated, e.g.

cv in Kymo. No. 2 - ɬa^hqda (h)

cvv " " " 21 - ɬa^hf^ha: (h)

and " " " 26 - ɬi^hf^hba: (h)

Such tracings of aspiration can be contrasted with those of final consonantal h in kymo. No. 58 - ɬac^heruh

5. Glottalization.

In final 'ɛ' tracings the lack of duration may be related to the subsequent closure of the glottis in the articulation of 'ɛ'. Such lack of duration is a permanent feature of the tracings of 'ɛ' in final position, e.g.

In kymo. No. 8 - maqtɛ:ɛʔ

" " " 17 - xaqaɛʔ

" " " 36 - jivzæɛʔ

" " " 42 - jifɛɛʔ

In the kymogram No. 63- romj, a displacement of the style before the tracing of 'r' may be interpreted as a glottal release. In such a position, 'r' is described as glottalized.

6. Nasalization.

For the study of nasalization in a kymogram, there must be a nasal tracing of the example. It is found that long-close vowels are nasalized, in some instances slightly, in others to a greater degree, e.g.

Kymo. No. 80 - mat^ərü:c

" " 82 - fi:h^um

" " 87 - maɟjü:ɾ

" " 92 - ʃüftumimbæɟi:d

In none of these four examples is the nasalized long vowel either directly preceded or immediately followed by a nasal. When, however, a vowel is preceded or followed by

a nasal, it is also nasalized, e.g.

Kymo. No.	80	-	mat ^ə rū:c
"	"	81	- maqtu:l
"	"	82	- fi:hum
"	"	83	- maŋmū:ŋ
"	"	84	- jilɛabɸinnɔ:r
"	"	85	- tʰan
"	"	86	- jɛtʰan
"	"	87	- maŋjū:ɾ
"	"	88	- sərɔqɟemalɛ:n
"	"	89	- maŋdʊ:ŋ
"	"	90	- nɔɟɛɛɛindʊ ɔ
"	"	91	- mazhʊ:m
"	"	92	- ʃʊftumɪmbaɛi:

X-Ray Pictures.

The static picture of radiography cannot directly be related to dynamic linguistic behaviour or, in other words, to living speech. Such^a picture is taken of a posture and not of a given phase of an utterance, and since such postures are extra-linguistic, the X-Ray picture is only indirectly applied to the description of an articulation. In a sense, such a picture is typological, i.e. a given posture is thought to be typologically related to some articulatory positions. It is only with this view in mind that the employment of radiography as an instrumental technique of linguistic research is justifiable.

Twelve postures are photographed for the purpose of this work. These are:

- | | |
|------------------|-------------------|
| 1. Rest | 2. Rotation right |
| 3. Rotation left | 4. d posture |
| 5. d posture | 6. t posture |
| 7. t posture | 8. q posture |
| 9. s posture | 10. s posture |
| 11. z posture | and 12. h posture |

These postures can be described as follows:

1. Rest: The tongue is almost in a semi-circular shape. The velum is lowered and the pharyngeal cavity is free of constriction. The purpose of showing this posture is to consider it as a point of departure in relation to which a given articulatory posture can be described.

2. and 3. Rotation right and left: These two positions are also of rest, but the informant is not sitting perfectly side-ways to the camera. In one posture he was slightly turning to the right and in the other to the left respectively. The reason for these postures being adopted is to show to what degree a rotation right or left can show superimposition of ^{one} organ on the other.

4. q posture: The back of the tongue is raised and drawn back towards the back pharyngeal wall. The velum is raised, and the whole body of the tongue is long in shape in contrast to the position of rest. Under the root of the tongue, there is a pharyngeal widening, probably with some relation to the resonance.

5. a posture: The velum is raised and the whole body of the tongue is semi-circular in shape, but higher in position than at rest. The pharynx is almost twice as wide as at rest. The widening is not only under the root of the tongue as in 'q', but all over the pharynx.

6. ɿ posture: The velum is raised. The back of the tongue is raised and drawn back to a larger degree than with 'q'.

7. t posture: As in 'd', but the pharynx is narrower.

8. ɑ posture: The velum is raised. The front of the tongue is lowered and the back raised and drawn back to come in actual contact with the velum and the back pharyngeal wall. The space between the jaws is wide.

9. ʂ posture: The velum is raised. The back of the tongue is raised and drawn back towards the back pharyngeal wall. As in 'q' and 't', the widening of the pharynx is only under the root of the tongue.
10. s posture: The velum is raised. The pharynx is wider all over than at rest. The shape of the body of the tongue is semi-circular.
11. ɣ posture: Above the hyoid bone, the epiglottis can be seen in actual contact with the back pharyngeal wall. Under this bone, the front of the pharynx is drawn back closely approaching the glottis as if to close it. The 'ɣ' consonant is described as glottalized in some contexts.
12. h posture: The epiglottis is very close, as it projects, to the back pharyngeal wall. The part of the pharynx under the hyoid bone is more relaxed here than has been noted for the 'ɣ' posture.

The following conclusions can be drawn from these descriptions:

1. Comparing q , t , ʂ with d , t , s , one may be able to say that the former are pharyngealized, while the latter are not. This pharyngealization, an organic term, can be related to the resonance called emphasis which is an acoustic term.

2. When contrasting these three former with 'q', it can be said that 'q' is buccal; or, if such term could be

used, "velo-pharyngeal", while the three emphatics are pharyngealized.

3. Such description of 'q' as buccal will still be understandable when its posture is compared with those of 'ɣ' and 'ħ' whose articulations are lower down in the pharynx. If the term epiglottal is permitted, it could describe the articulations of 'ɣ' and 'ħ'.

4. The pharynx is wider open with articulation than at rest.



1 1
q̄t:f



q̄a:ε(ς)



q̄u ha:



f̄aq̄ē:ka,h



f̄aq̄ah



ε:ηαx



2

biqza(h)

2

zadma:(h)



madxa(h)



h:abvz



gamma(h)



gabqz(h)



3



i .3

baxt:d



hamag



hamu:d



xagq:t:h



ecq:(a(h)



h:abax



εααα



εααα



t±:b



t±bb



t±bq



t±b*ga,h



ta:b



t±:f



χατῆ:ῖῃ



εατῆῃ



χατῆ:ῖῃ



ετῆῃ



εατῆῃ



χατῆ(ῖ)



հաշէի



մաշէի



հաշէի



հաշէի



մաշէի



մաշէի



xʌbɛ:ɛ



xʌbat



huba:ɛ



hattɛɛ



ɛattab



xattɛ:h



qitt



hatt



xatt



q̄: b



q̄: b



q̄: in



q̄: b



q̄: b



q̄: b



xasnu (h)



resha:



saush:



xabsu h



masa:b



masa:m



qam+:s



xabag



g+:s



nas+:h



qas+:h



casab



passib



qam±:s±h



f±ss



bass



ti:h



tæ:b



tu:b



ɛati:q



ɛatæb



futw:h



jiti:h



iterg



xitma(h)



satfah



matbl:z



mutecb





baxtu:h



saxtu:h



maftu:h



attaz:h



gattab



huttu:h



baxi:t



bitt



batt



sabat



ba:t



hu:t



di:b



dæ:b



du:b



ɣadi:m



ɣadæ:b



hudæ:m



ga: dīn



gabād



hē dīn ch



gabād



hē dīn ch



gabād



Panel n



Panel o



Panel p



Panel q



Panel r



Panel s



b-ɛz:d



ɛa:d



wɒtɪ:ɪ



wɪdɪ:ɪ



bʌddæɛ (ɣ)



haddɜ:h



dieban



gadæd



gadæd



gadæd



widd



hadd



fusu:q



si:b



sæ:b



su:q



hasi:b



hasæb



həbba(h)



sasba:b



fusha(h)



sahsib



salsah



masu:g



büssi: x



massæh



hassv: h



habüs



habas



bu: s



S. 100:



A. 100:



S. 100:



A. 100:



zi:h



zæ:m



zu:γ



hazî:m+(h)



büzu:γ



zaxæm



zu:n



nizbūh,



gazham



mā'zūm



xuzqū (h)



muzhagh,



h2zæm



sanzim



sanzæm



samzæh



mæzæm



yamzu(h)



hazzæb



hazzæm



kuzævîh



xabî:z



yamaz



fûz



8182



1812



1822



ni:b



ne:b



ηü:h



εoni:f



manpe(ς)



xuηü:ε(ς)



S. 1000



S. 1000



S. 1000



S. 1000



S. 1000



S. 1000



ḡahni:hy(h)



ḡahnp:b



maḡū:ḡ



ḡahI:n



ḡafan



xu:n



na:ni:hu



na:ni:hu



na:ni:hu



na:ni:hu



na:ni:hu



na:ni:hu



11:f



1p:m



10:m



10:n



11:g



11:h



sali:m



mald:



sali:m



mald:



sali:m



mald:



17011

85 110



17012

85 110



17013

85 110



f: 11: 11



f: 11: 11



f: 11: 11



f: 11: 11



f: 11: 11



f: 11: 11



u. u.



41

ma11



u. u.



pl:



PD:



pl:



gul":



Tard:b



Tard:b



Ury:



Pa:rob



harom



haro:



hugü:



hugü:



L4 L4



L4 L4



L4 L4



L4 L4



45



mügrich



45

mügrich



mahrüm



bür



mürr



mürr



11170



11171



11172



11173



11174



cima:ma(h)



haci:m



cū:b



εucū:f



hzcma(h)



sanc i : bū(h)



magis: f



bucm



fir:c



bu:c



fuccis: h



fucc



49



ga:ʃ ba,h,



maʃmu:ε



wuʃtu,h,



saʃʒε,h,



wiʃha,h,



saʃmaε,h



51

1160316



1160315



1160317



1160318



1160319



1893



1893



1893



fɛ:b



fɛ:ɪf



kaɣem



maɣe:(h)



saɣbaɣ(s)



saɣa:b



54

SAX 5.17



SAX 5.18 (h)



SAX 5.19



SAX 5.20



SAX 5.21



kuffi:h



ma:ssc:h



kass



kass



56

gabje:m



gabje:b



wabje



wabje



xat+jje(h)



xat+jje



maqq+:



maqq+:



badq+:



muxt±:



mútt±:



muxatt±:



xattt:



SAETt:



battt:



SAWSt:



qaggst:



ST lmt:



Halmi:



Halmi:



Halmi:



Halmi:



Halmi:



Halmi:



manni:



manni:



manni:



manni:



manni:



fabzi:



bitti:



huzzi:



sanji:



bitti:



63

90:



90:



90:



90:



90:



90:



sa:b



xa:b



da:b



ga:b



no:b



da:f



65

65

ba:d



ba:x



ba:l



ba:ε



ba:p



ba:q



66

66

ja:f



xa:f



fa:f



ga:f



lo:f



so:f



gum



qu:m



du:m



m:u



m:u



m:u



je ni:



je ni:



je ni:



je ni:



je ni:



je ni:



jüjü:duh



citæ:b



citæ:b



feluidæh



ni jhab



saffüf



KYMOGRAPHY...MOUTH TRACINGS.

1. jɪqɔ̃ɪ:

2. ɛaɔ̃ɔ̃a

3. jɪtʃɪ:

4. ɛaɪtʃaɪ

5. ɛaɪɛɪ

6. ɛaɪtʃɛɪ

7. ɛɛtʃɛɪ

8. mɔ̃qɪu:ɛɪ,

9. mɔ̃qbū:ɪ

10. sɛrɔ̃qɪtʃɛ:b

11. sɛɪfɔ̃aɪ

12. mājebū:ṛ

13. qabq̄t̄l̄b̄: t̄h̄,

14. jid̄s̄ab

15. mādqu:q

16. jīj̄sar

17. xaq̄q̄

18. faḍal

19. haqq

20. haṭab

21. ṭafaḥ: (h)

22. maḥṣū: {

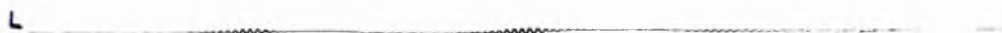
23. ṣabci:

L 

24. qa:jaqʕaxu:h

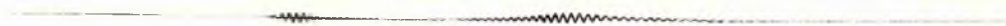
m 



L 

25. atʕaʕeʕ

m 



26. jiʕba:(h)







27. jiʕtu:





28. ʕaʕya:l





29. ʕaʕʕe:r

30. ma:fʕ3zɔjjɪ(h)

31. maʕdu:d

32. maʕdu:d

33. maʕdu:d

34. raʕaʕz3:nɔb

35. jəroŋgalt:

36. jɪzəɪ

37. ʔafɣa:nt:

38. jɪfɾɒh

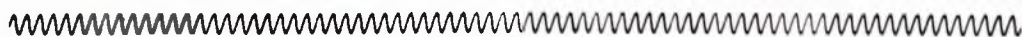
39. jɪfɛnt:

40. ʔafwa:j

41. safjed



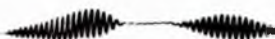
42. jifjeE



43. safdi:



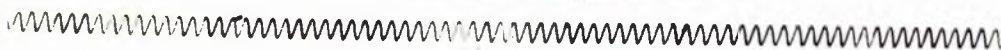
44. jifqah



45. saffat



46. mazcūim



L _____

47. mæh

m _____

L _____

48. nɒɪf

m _____

~~~~~

L \_\_\_\_\_

49. ɣamɛ

m \_\_\_\_\_

L \_\_\_\_\_

50. ɕaziːɛ

m \_\_\_\_\_

~~~~~

L _____

51. haɓaɣɛɛɛːnɒb

m _____

L _____

52. ɟiɓhæ

m _____

L _____

53. mah²ū:q

m _____

L _____

54. jərohhum

m _____

~~~~~

L \_\_\_\_\_

55. əddəbah

m \_\_\_\_\_

L \_\_\_\_\_

56. əhtəmm

m \_\_\_\_\_

~~~~~

L _____

57. mahfū:m

m _____

L _____

58. facəroh

m _____

L _____

59. fahloim

m _____

L _____

60. jifham

m _____

~~~~~

L \_\_\_\_\_

61. fahbar

m \_\_\_\_\_

L \_\_\_\_\_

62. afjar

m \_\_\_\_\_

~~~~~

L _____

63. romj

m _____

L _____

64. rafw

m _____

L _____
65. ceab
M _____

L _____
66. rucen
M _____

L _____
67. lnd
M _____

L _____
68. mahd
M _____

L _____
69. qafz
M _____

L _____
70. layem
M _____

L _____

71. noej

M _____

L _____

72. qujen

M _____

~~~~~

L \_\_\_\_\_

73. eaqol

M \_\_\_\_\_

~~~~~

L _____

74. qapoe

M _____

L _____

75. xapojettitmaffe:

M _____

~~~~~



L \_\_\_\_\_

76. hafer

m \_\_\_\_\_

L \_\_\_\_\_

77. bāher

m \_\_\_\_\_

~~~~~

L _____

78. faqer

m _____

L _____

79. faqer

m _____

~~~~~

L \_\_\_\_\_

80. matqflic

m \_\_\_\_\_

L \_\_\_\_\_

81. maqtu:l

m \_\_\_\_\_

~~~~~


82. fɪ:hʌm

83. mʌsmʊ:n

84. jɪlɛabɸɪnnɔ:r

85. tʌhan


86. jɪtʌhan

N




87. maejy:q

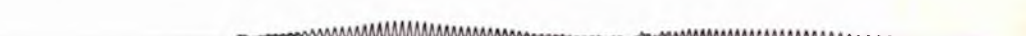
L



M



N

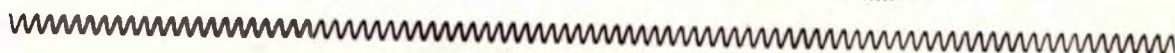


88. saraqjemal3:n

L



M



N



89. maejy:q


L



M



N



90. na333ind3:h,

L



M



n

91. masbunim

L

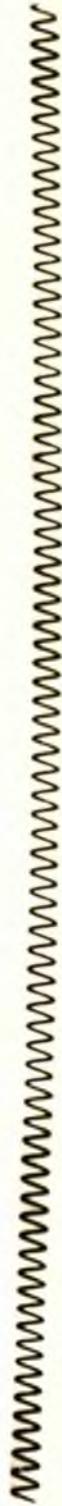
m

n

92. jufumimbadid

L

m

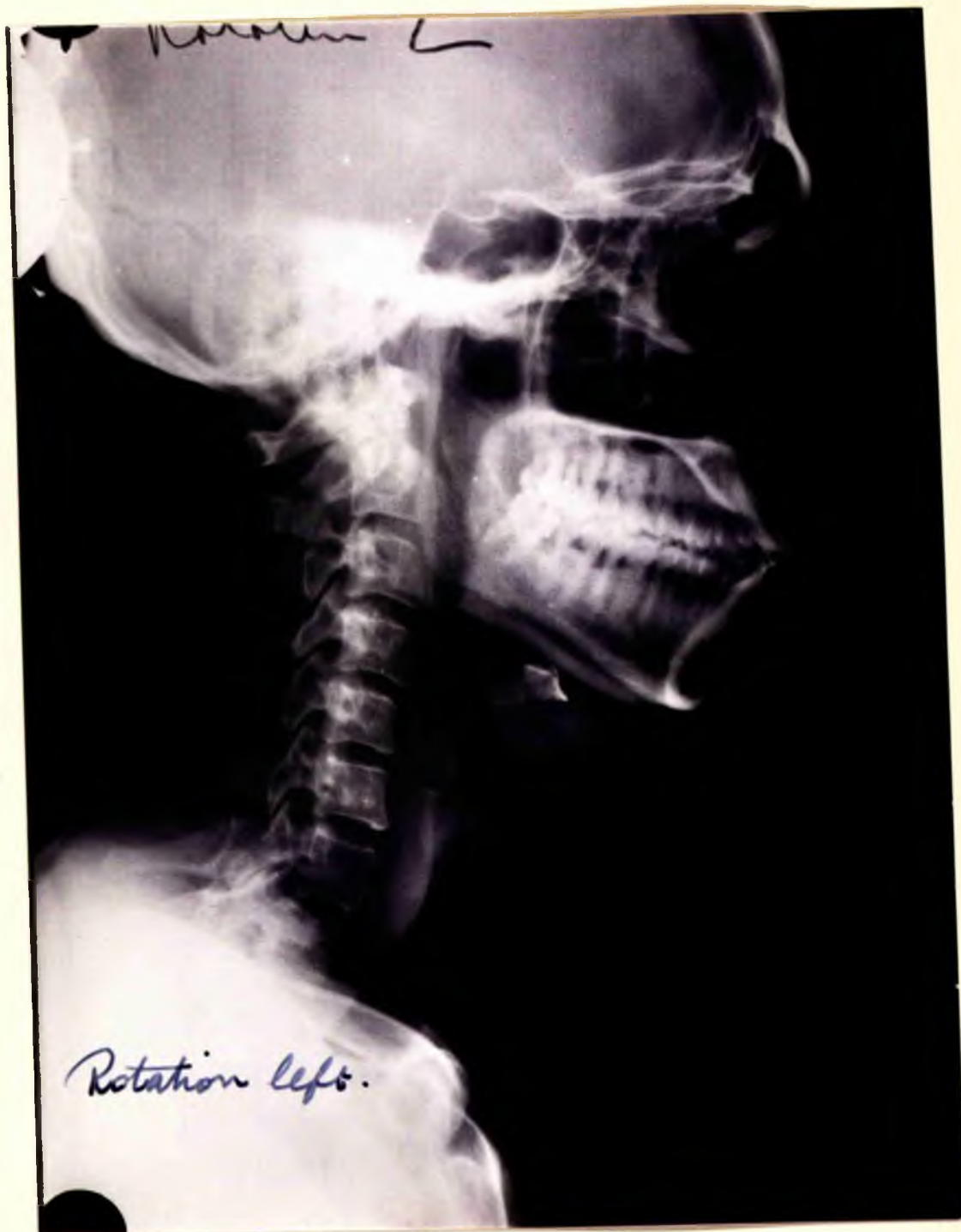




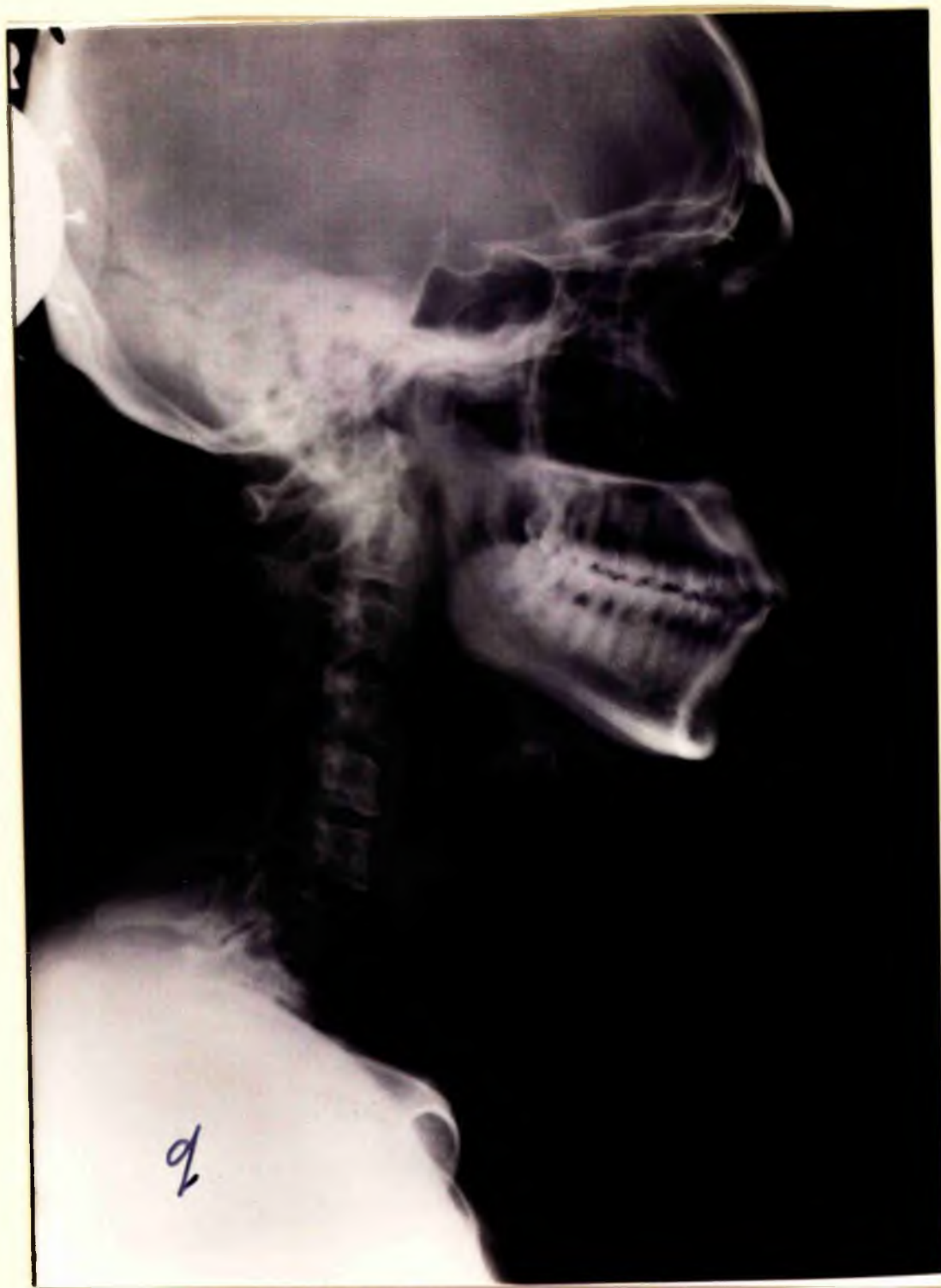
REST.



ROTATION RIGHT.



ROTATION LEFT.



d.



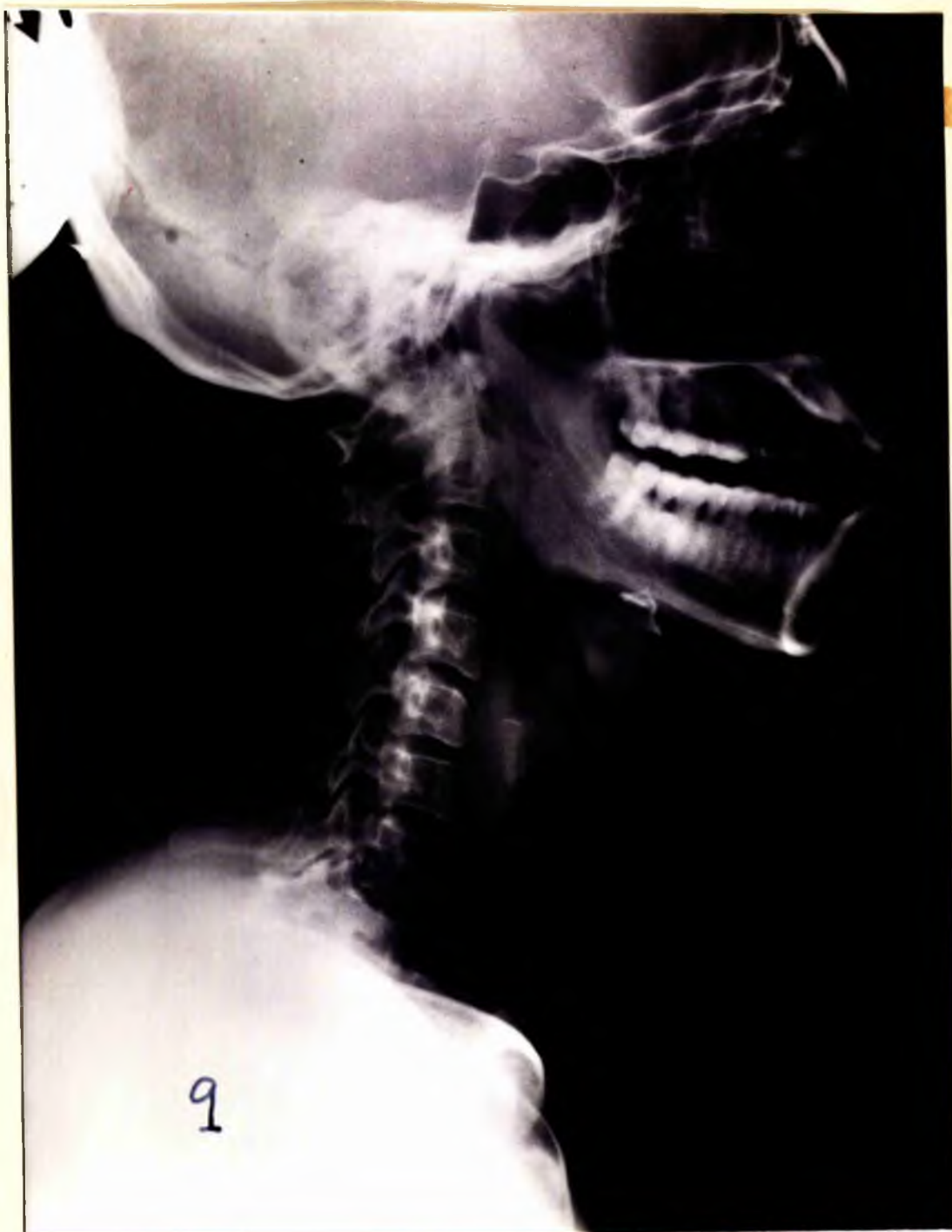
d.



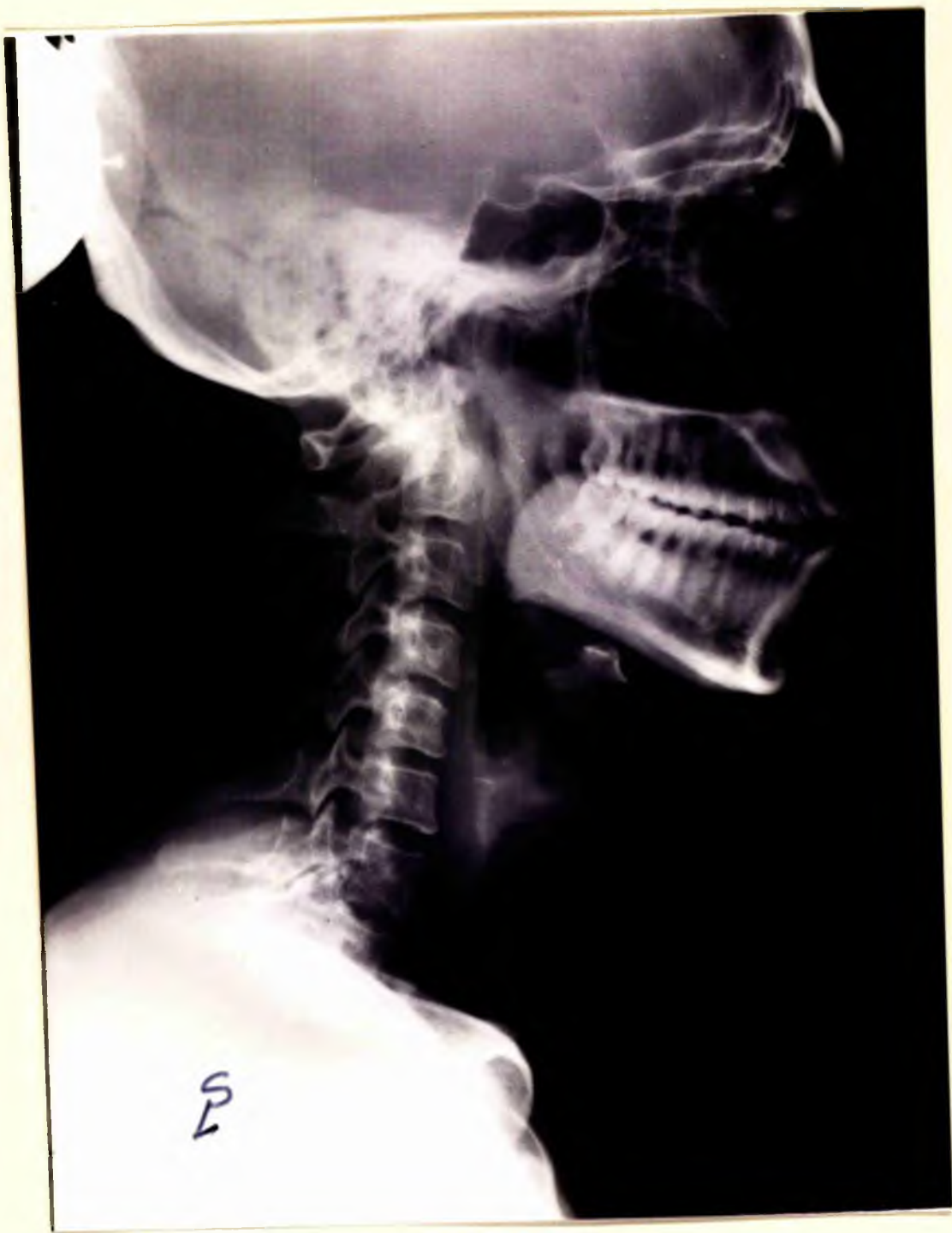
t.



t.



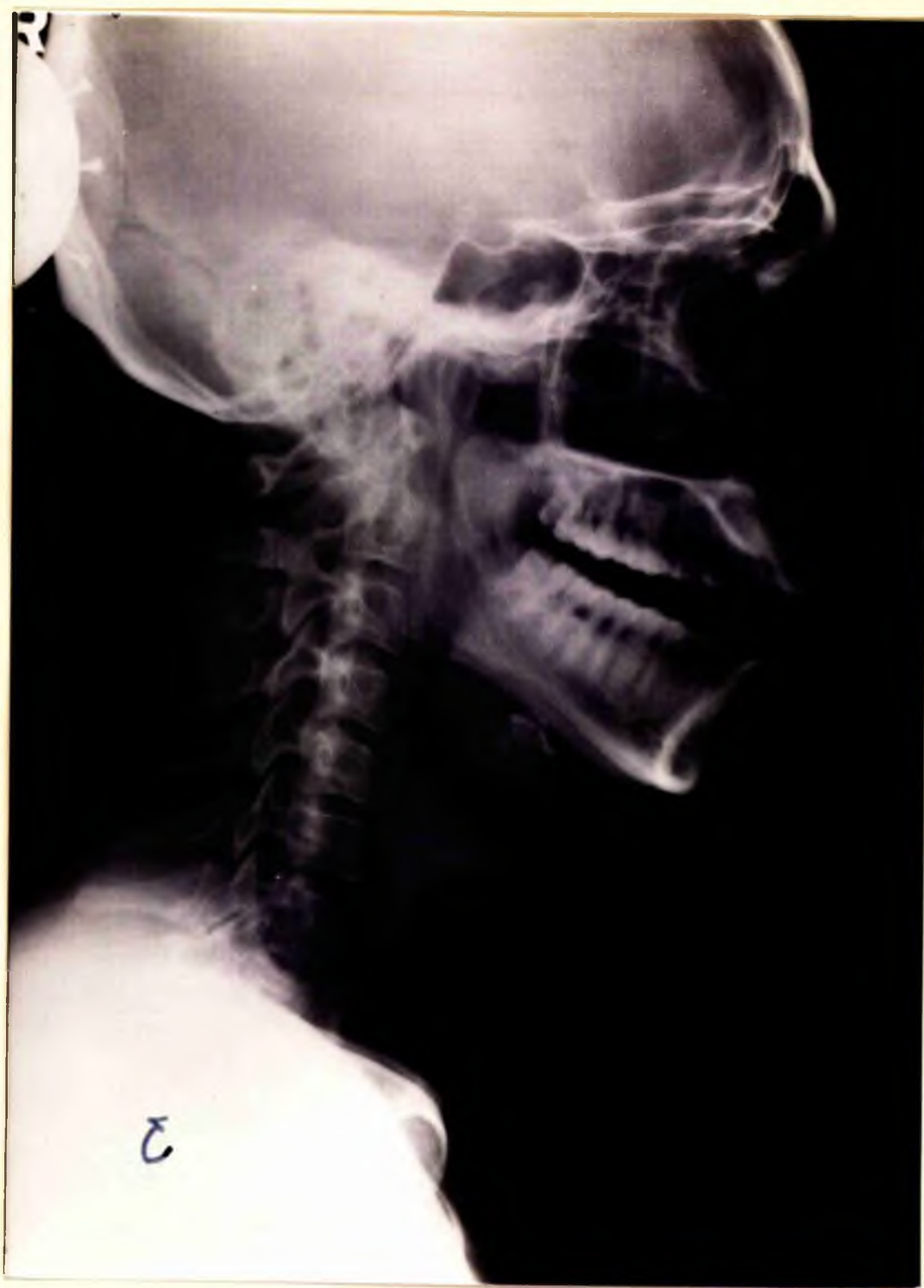
9.



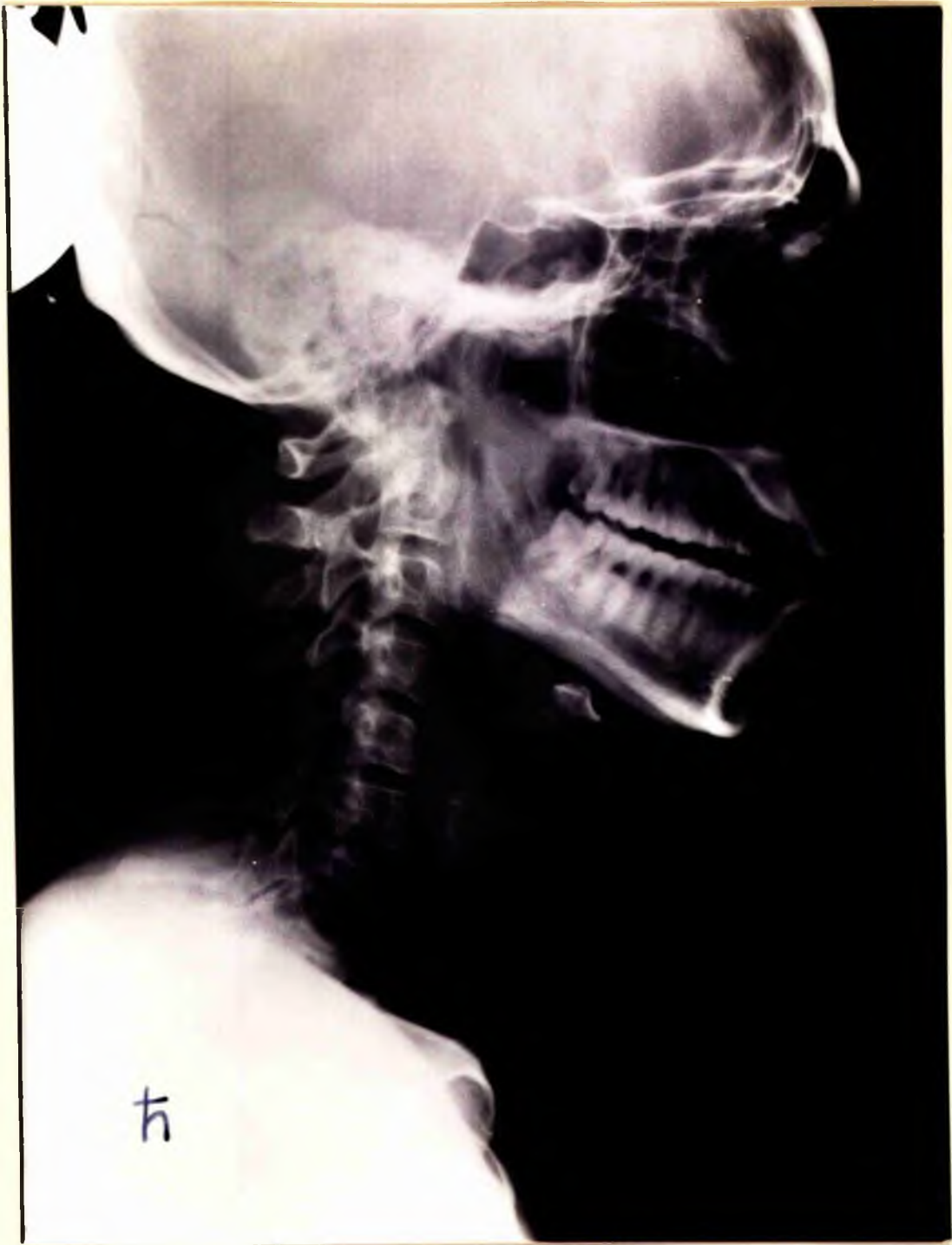
S.



S.



ε.



h.

ZONES		
LEFT	RIGHT	
4th Molar Line.....	7	..2nd Molar
3rd Molar Line.....	6	..1st Molar
2nd Molar Line.....	5	..2nd Pre-Molar
1st Molar Line.....	4	....1st Pre-Molar
Canine Line.....	3	...Canine
Lateral Incisor Line....	2	.....Lateral Incisor
Incisor Line.....	1	.....Frontal Incisor